A LIFT-UP BOOK

Each black-and-white page between numbers 7 and 70 when lifted towards the light shows a coloured picture through the paper.

The design for the end-papers is based on diatoms – minute deep-water fossils

By the same author

A Book of Pictorial Perspective
Another Lift-up Book uniform with
A World of Pattern

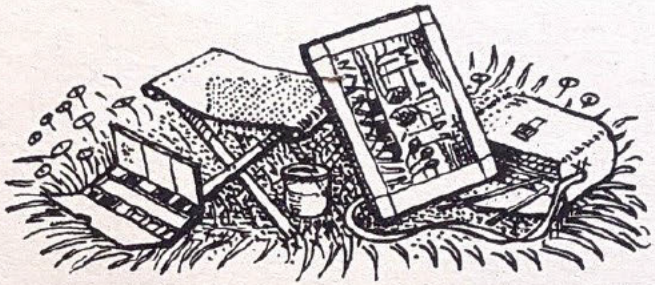
A Book of Toys (King Penguin)

A Book of Dolls (A. & C. Black)

[redacted]

APR 30 1958

A WORLD OF PATTERN



by Gwen White

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LONDON

JOHN MURRAY · ALBEMARLE STREET

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INTRODUCTION

How curious it is that so many man-made patterns look alike, when all around us everywhere are new patterns waiting to be discovered. Some large, some small and some so tiny that they can only be observed with a magnifying glass. When ideas are taken from personal observations how very different designs become, for nothing is boring or monotonous in the world of pattern, and the variety of things from which to choose is infinite. The more one sees, the more one realizes how much there is left to explore.

The things of Nature vary not only in different districts and countries, but also with the seasons of the year. In their growth, too, changes of pattern are taking place all the time. It is up to the design discoverer to select and adapt to his own requirements all the inspirations he may get from the town and countryside, and not to lose sight of the origin of his first idea.

Man made primitive designs long before he began to travel, and these were applied to his person, his walls, his pottery and his textiles. A design by a Chinese man was totally different from that done by, say, a Mexican, because both were influenced by their surroundings and the climate in which they grew up. They had no notion of what people in other countries were doing but gradually as man began to travel he found that designs and patterns could be grouped into the regions of their origin: the designs of the West being entirely different from the designs of the East. Those of the West could again be divided as being typically English or typically French, each country producing its own exclusive patterns, which in turn were influenced by the methods in which they were produced. The craftsman was the designer, apart from being a skilled workman.

During the Middle Ages more travel was undertaken, and man saw what was being done in other countries. Instead of being influenced by his own countryside he now began to absorb other ways of doing things. But often the craftsman himself was not the traveller and, instead, ideas were brought back for him to interpret. Thus inspirations became second, third and even fourth hand, until the original idea was almost obscured. The Italian ideas, when introduced into England, became mere copies instead of creations, and the craftsman's native inspirations were gradually squashed. The taste of fashion predominated, the simple things of t countryside were overlooked, and often the id itself was far inferior to the manner in which it w carried out.

Apart from inspirations and observations in t world of pattern, there are various ways in whi designs may be grouped. The motifs and patte discovered can be put under constructional hea ings. Although there are no set laws, it is useful have a basis on which to work to enable the desi to be the best for which it is intended. In the laws Nature, the crystal formations give a basis on whi to start. These could be in simple plan form or the third dimension. When mixed together wi plain spaces or stripes many variations can b formed, on which motifs could be placed if desire The scale of these formations can be varied in ma ways, and natural or scientific objects all look w when applied to these foundations. Even when network of lines has been evolved by marking equal distances with a rule, the result strange enough often resembles one of the crystal form tions, or the construction of some natural object.

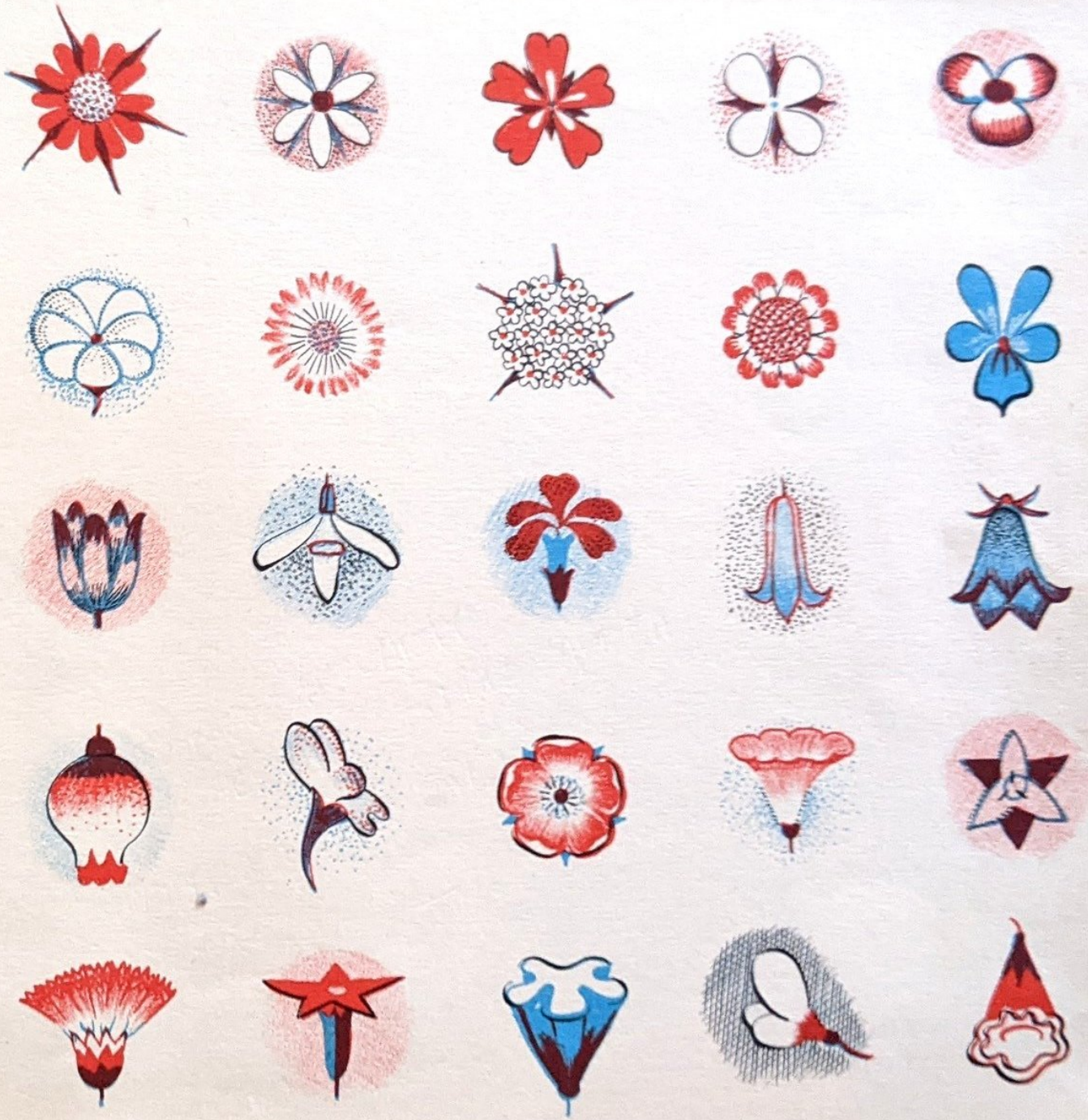
As the law of repetition comes into so man patterns, it is interesting to suggest some of th ways in which motifs can be placed to form designs Patterns should be adapted for their purpose, som being single units and some a repetition of one more units, often linked together. 'Repeats' are use in Textiles, Wallpapers, Carpets, etc., and moti and running borders are often used in Embroider Pottery and China Painting.

Fitness of purpose is necessary, as a really goo design can often be ruined when put in the wro place. A designer should think what his design for, even if he may not know the ultimate positio it will occupy. The scale of the pattern must also considered as well as the method by which it will reproduced. For instance, a repeat design whi would look well as a book paper would be unsu able for a restaurant carpet, and a design for a si material would look equally wrong when applied t a dinner service. Such examples are endless, an whether the result will look well is a matter o experience and good taste.

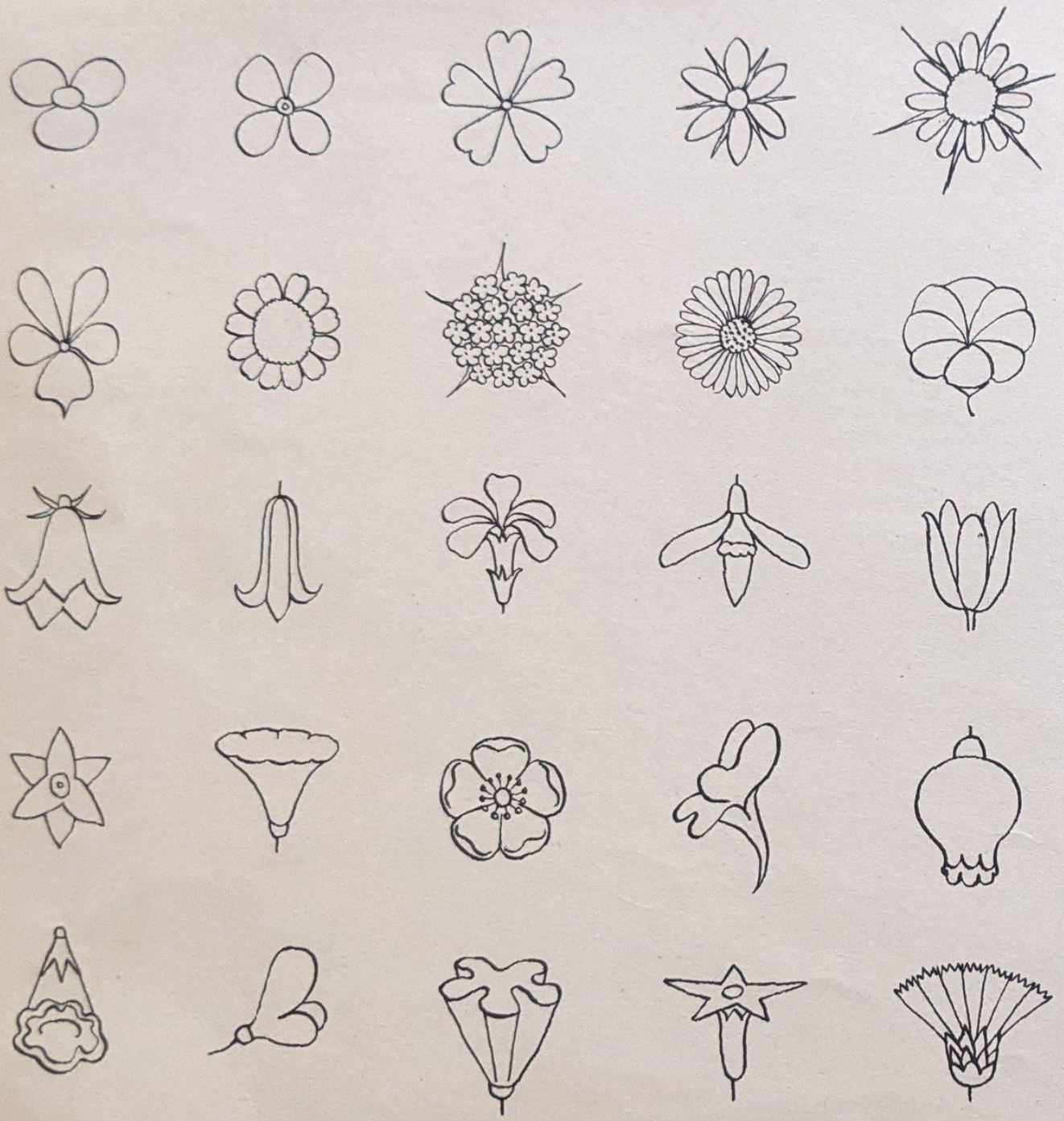
At the end of the book are a few helpful note which are not always easy to remember.

GWEN WHITE
A.R.C.A.

OBSERVATIONS



FLOWERS



FLOWERS

From an infinite number of things i the Universe, flowers have been chose for the first page. The drawings hav been made from only a few of thos flowers which grow wild in England Besides all the other English ones fro which to choose, there are all thos which flourish in other countries. Man of these are more exotic and in som cases more curious in shape.

Seed cases, buds, fully grown flowers, falling petals, all these, including the actual plant, suggest endless variety in their pattern, and it is easy to become aware of this when studying actual specimens. Not only is the silhouette of the flowers so varied, but the colours of single blooms change and alter in the numerous varieties.

Although the twenty-five flower shown here have been chosen for their distinct outline, each one shape shown is still only one view of that flower. For example, every single flower could also be drawn in a number of different positions. These could be top, side or bottom view, longitudinal or cross-section, thus making five new views, always providing that the actual specimen is at hand from which to make the sketches.

LEAVES

ke the flowers, these twenty-five ves have been chosen for the variety their pattern, form and outline.

These are English leaf shapes, just a w of them, and endless other forms e to be found amongst the tropical ants. Many of these can be found in otanical gardens or in the hot-houses Kew. Not only does the outline of ne leaf-shape vary, but the delicacy of he veining in some leaves is in contrast o the thick fleshiness of others.

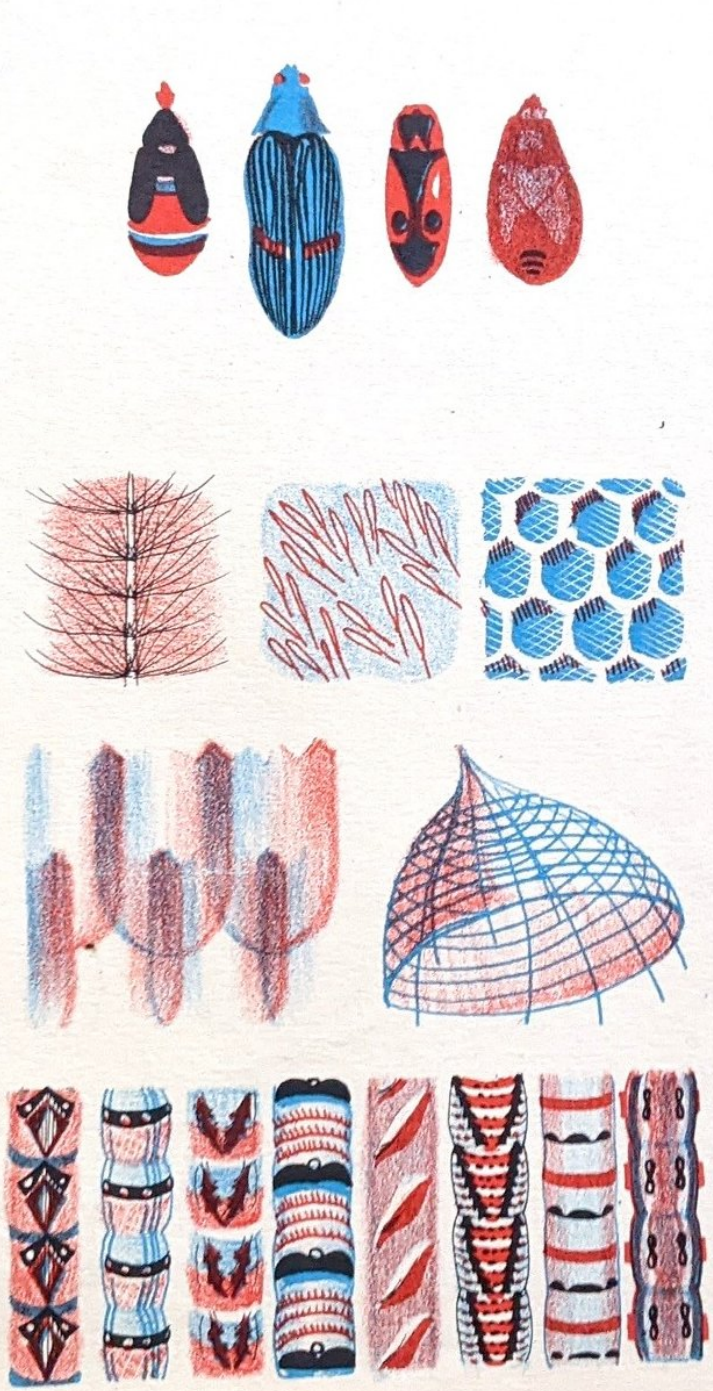
It is wise, when making a leaf and flower design, to use the appropriate leaf with its own flower, and to make sure that each flower grows from its own individual stem.

Leaves on their own are very beautiful and many have a different colour on e reverse side.

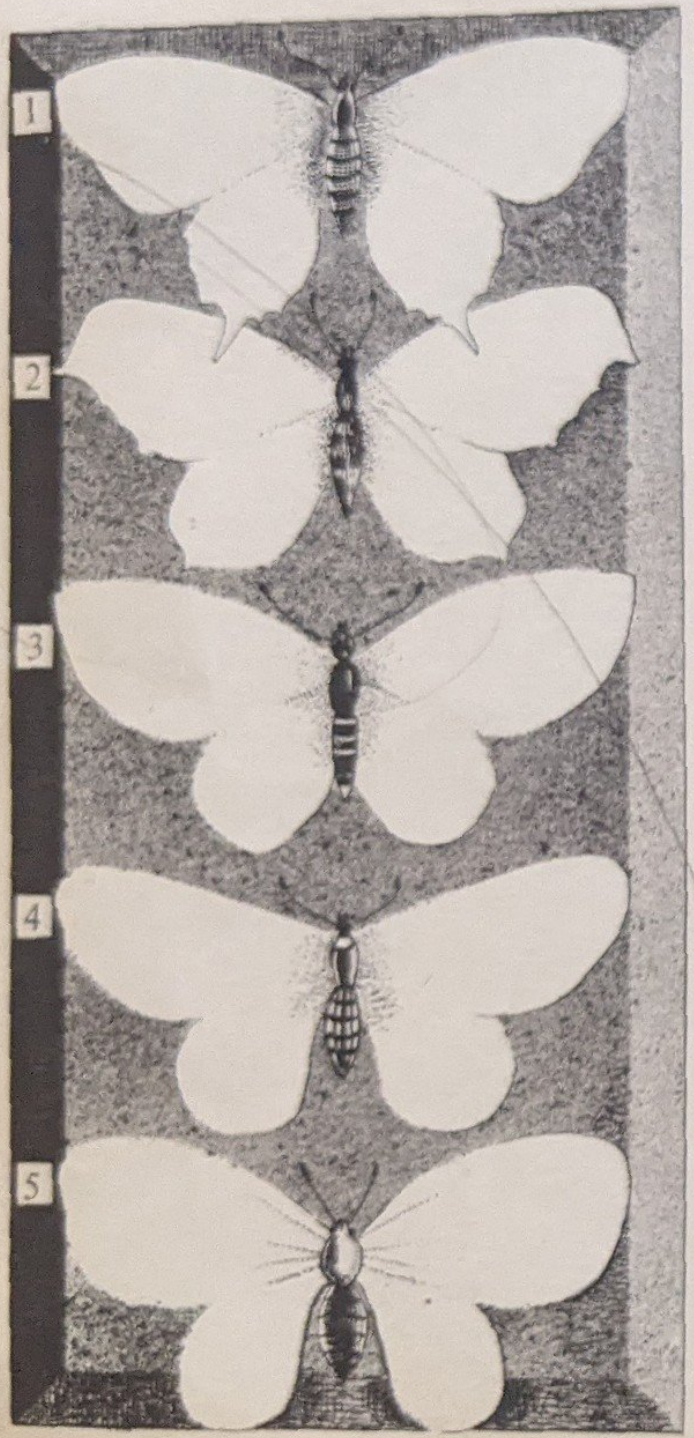
Mention must also be made of stems d stalks, which are of various thicksses. Some are hard and woody, while thers may twist and wind, creep along he ground, or twine around other ems.

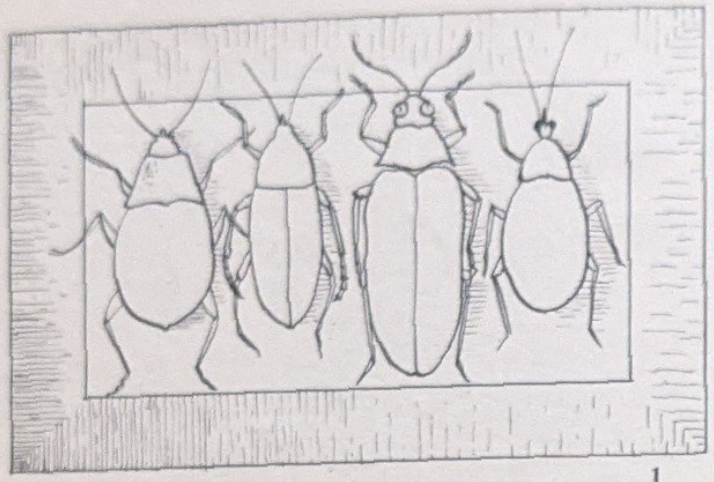
Many positions can be drawn, the eaves being made to lie flat or to turn ver. There are the different sizes and rrangements on the stem also to be nsidered. Often they gradate from rge ones to the very tiny ones at the p of the stalk, or vice versa, the larger nes being at the top and the smaller the base, or alternatively, they may row from a clump or cluster.

LEAVES



INSECTS

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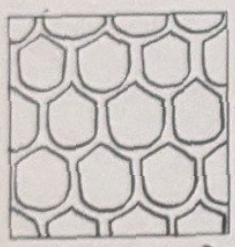
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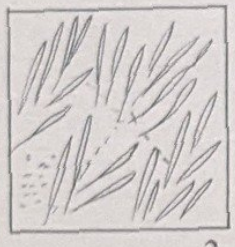
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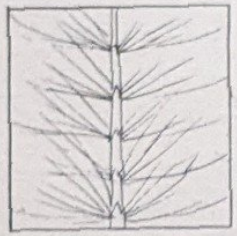
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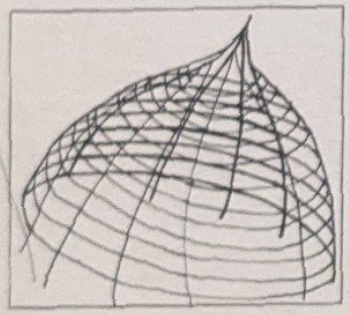
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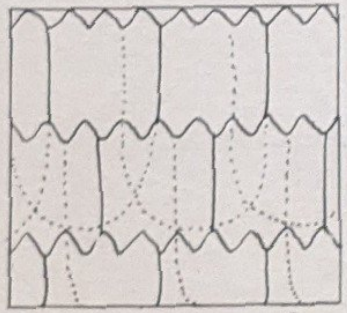
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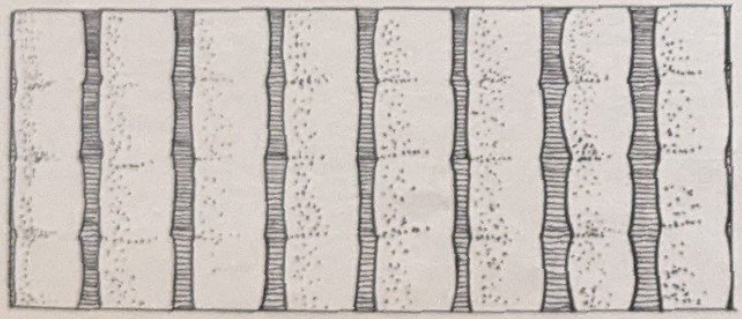
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INSECTS

In the world of insects are many curiou patterns. These are found on th wings and their bodies, and amon their eggs and the peculiar nests th build. If a magnifying glass is used, th the patterns observed are even mo complicated and intricate.

The colourings of the specimens the insect world vary more than those animals, especially amongst the butt flies. Their wings and the bodies beetles suggest many different colo schemes, and not only are the act colours important, but also their re tion one to another and the proportio in which they are used. Sometimes dull shade is predominant, with he and there a patch of brilliant colo Two colours are hardly ever used equal proportions, and often a da background has a light pattern, or light background darker patches a splashes of colour here and there.

1 Four beetles
2 A honey comb
3 Mosquito wing
4 Gnat's antennae
5 Dome-shaped web
6 Butterfly's wing
7 Caterpillars

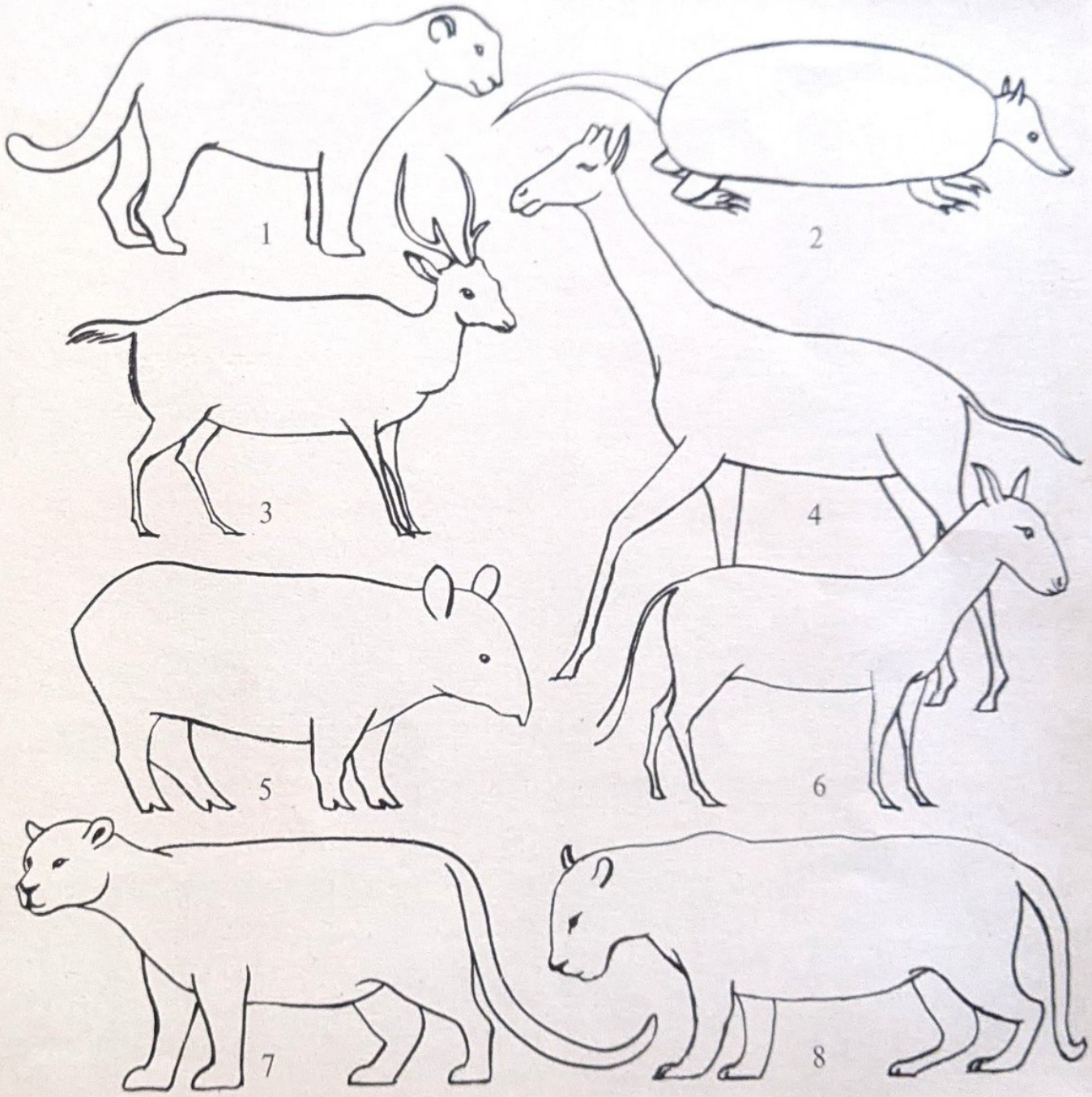
Butterflies:

1 Swallow-tail
2 Peacock
3 Heath Fritillary
4 Osterluzeifalter
5 Apollo-Falter

ANIMALS

imals are distinguished by their pe and size, their silhouettes varying re than the actual patterns found on n. The designs here are from their s, with the exception of the scales of Armadillo. The small pattern below ased on the fur of the young Tapir.

1 Jaguar
2 Armadillo
3 Deer
4 Giraffe
5 Young Tapir
6 Zebra
7 Leopard
8 Tiger



BIRDS

The shapes of birds and the design their feathers make another most teresting source for the study of Patte

The drawings here are mostly fr birds of the Pheasant family, wh have curious markings on their feath

Humming-birds are noted for th brilliant hue, and apart from the act colours, the proportion is import One tint usually predominates, t making a basis for a colour sche with here and there a selection of b liant colours in lesser areas.

1 Lady Amherst Pheasant
2 Wood Pheasant
3 Great Northern Diver
4 Chinese Silver Kaleege
5 Terminicks Tragopan
6 Grey Peacock Pheasant
7 Vulturine Guinea Fowl

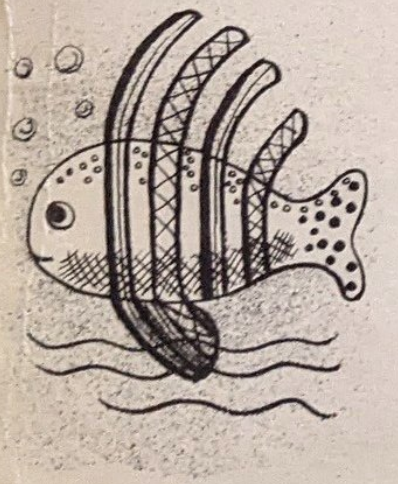
Humming-bi

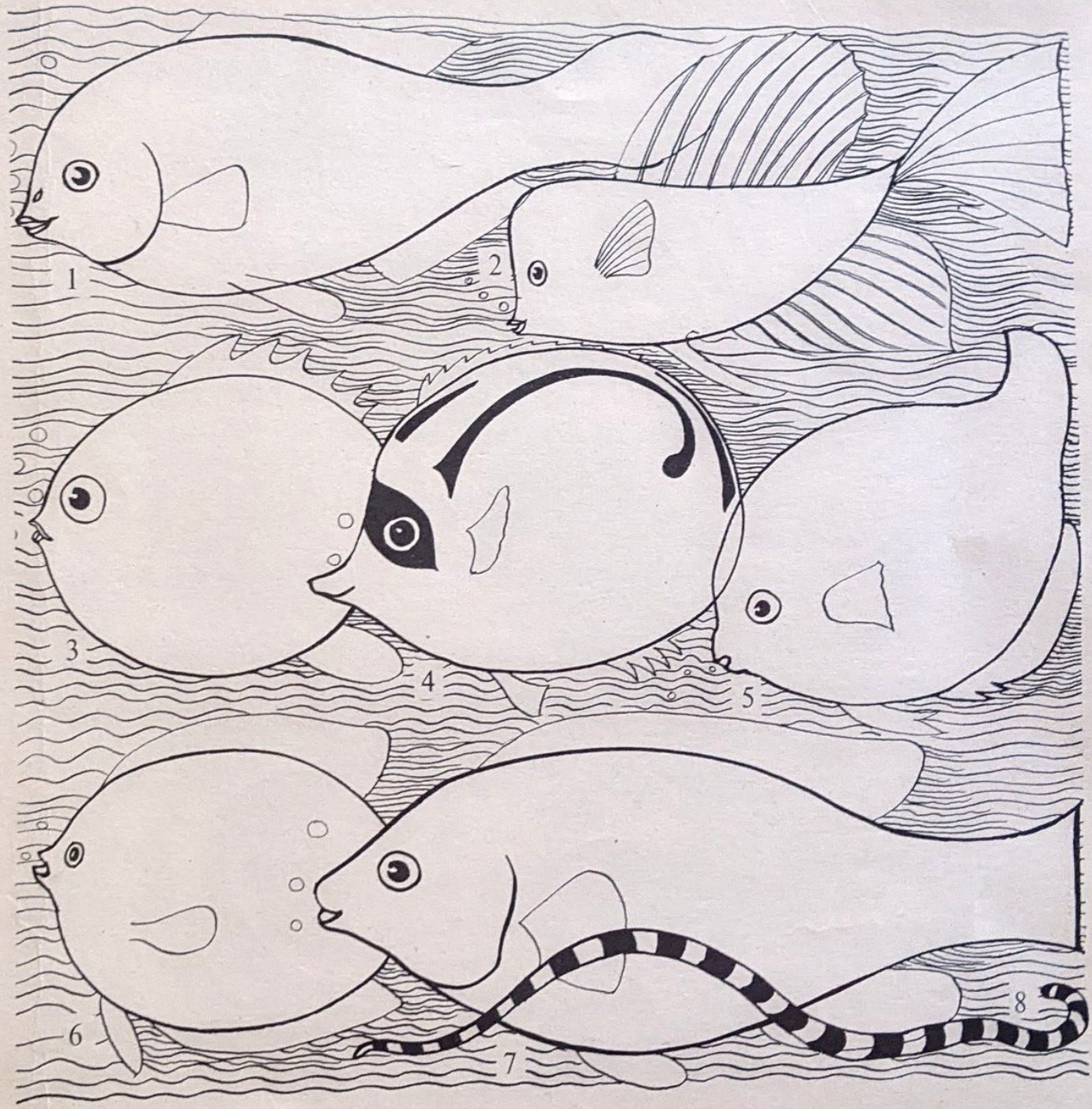
FISHES

The scales form beautiful patterns on their own, tapering from large ones on the body to minute ones at the tail end.

Not only do the scales make wonderful patterns but the shapes of the fish are very varied, and amongst the tropical ones many brilliant colours and extraordinary designs are to be found. The ones sketched here are from the Natural History Museum at South Kensington and have been chosen for the variety of their patterns. The eggs and egg-cases of fishes and the weeds and vegetation amongst which they swim make an underworld of pattern on their own.

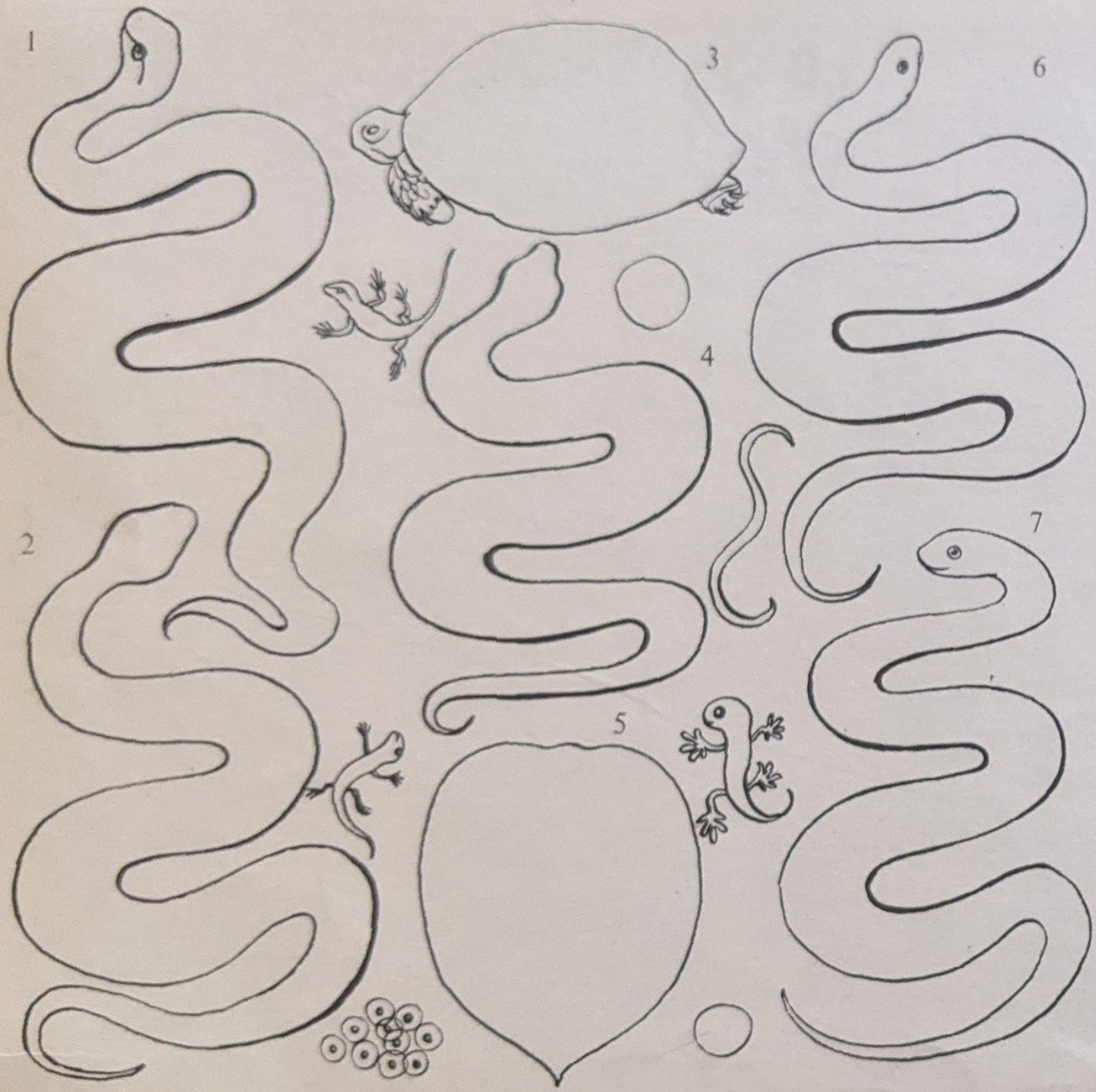
1 A Parrot Fish
2 Sturgeon or Tang Fish
3 Pintario Damsel Fish
4 Chaetodon fasciatus
5 Angel Fish
6 Angel Fish
7 Ballan Wrasse
8 Sea Snake





FISHES

REPTILES



REPTILES

The curious designs on the skins of reptiles somehow seem to have a primitive appearance, their colour combinations being very queer and unlike those of animals or birds. In fact, they do not seem to convey a rather sinister appearance, and would make good colour schemes for a witch's house or a scene with ghosts. As the snakes are coloured to match their immediate proximity the schemes are often the colour of the surrounding ground, gravel or plants amongst which they live. The pattern of their scales differs from those of the fishes in its construction.

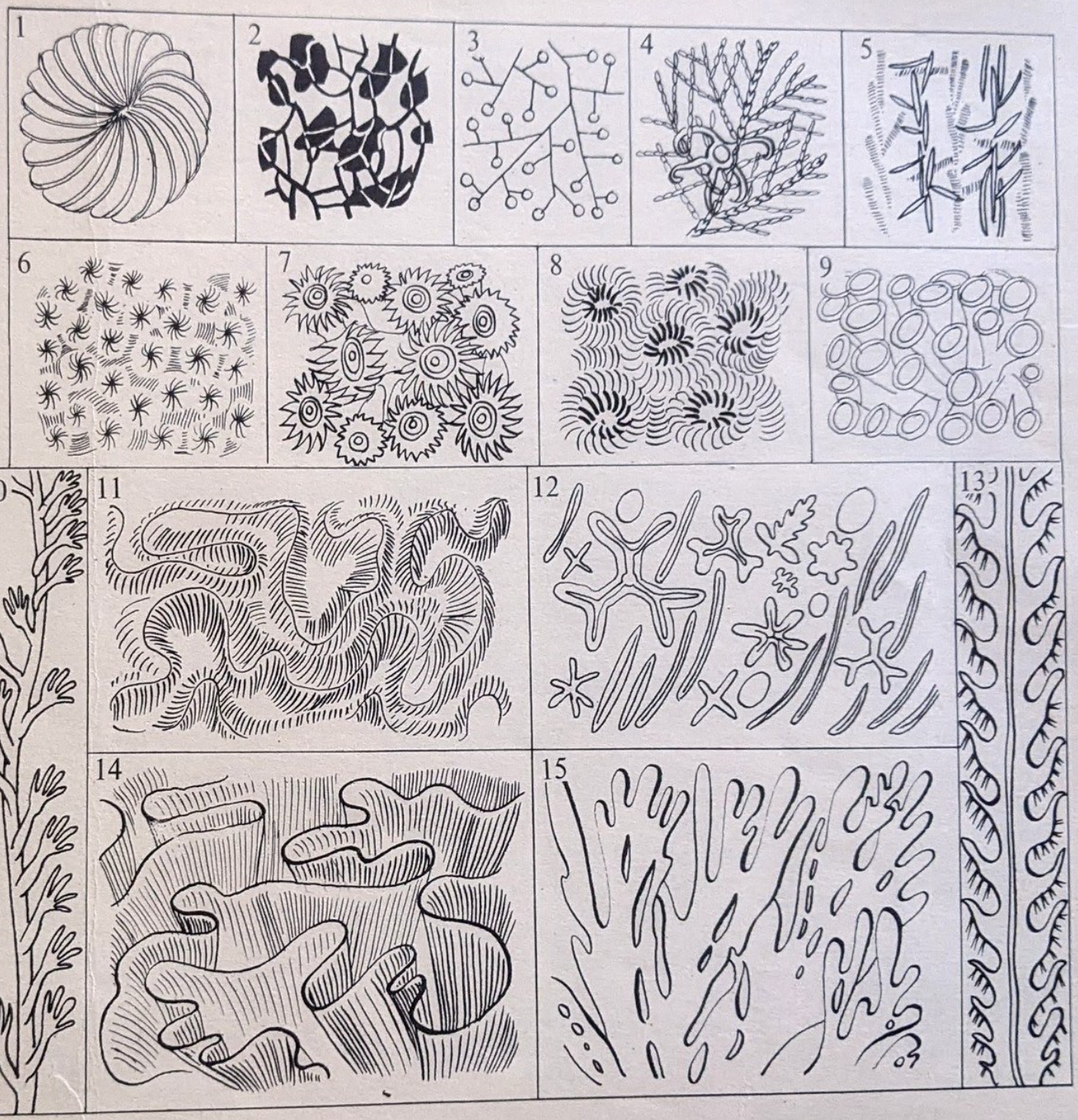
1 Horned Puff Adder
2 Mottled Rattlesnake
3 Malagasy Tortoise
4 Gabun Viper
5 South African Starred Tortoise
6 Russells Viper
7 Hardwicks Sea Snake

CORAL AND SPONGE

The formation of coral is most intricate and shows a remarkable diversity of form. The dead coral, which is the calcareous skeleton, makes a different pattern from that of the living coral when the soft polyps are extended.

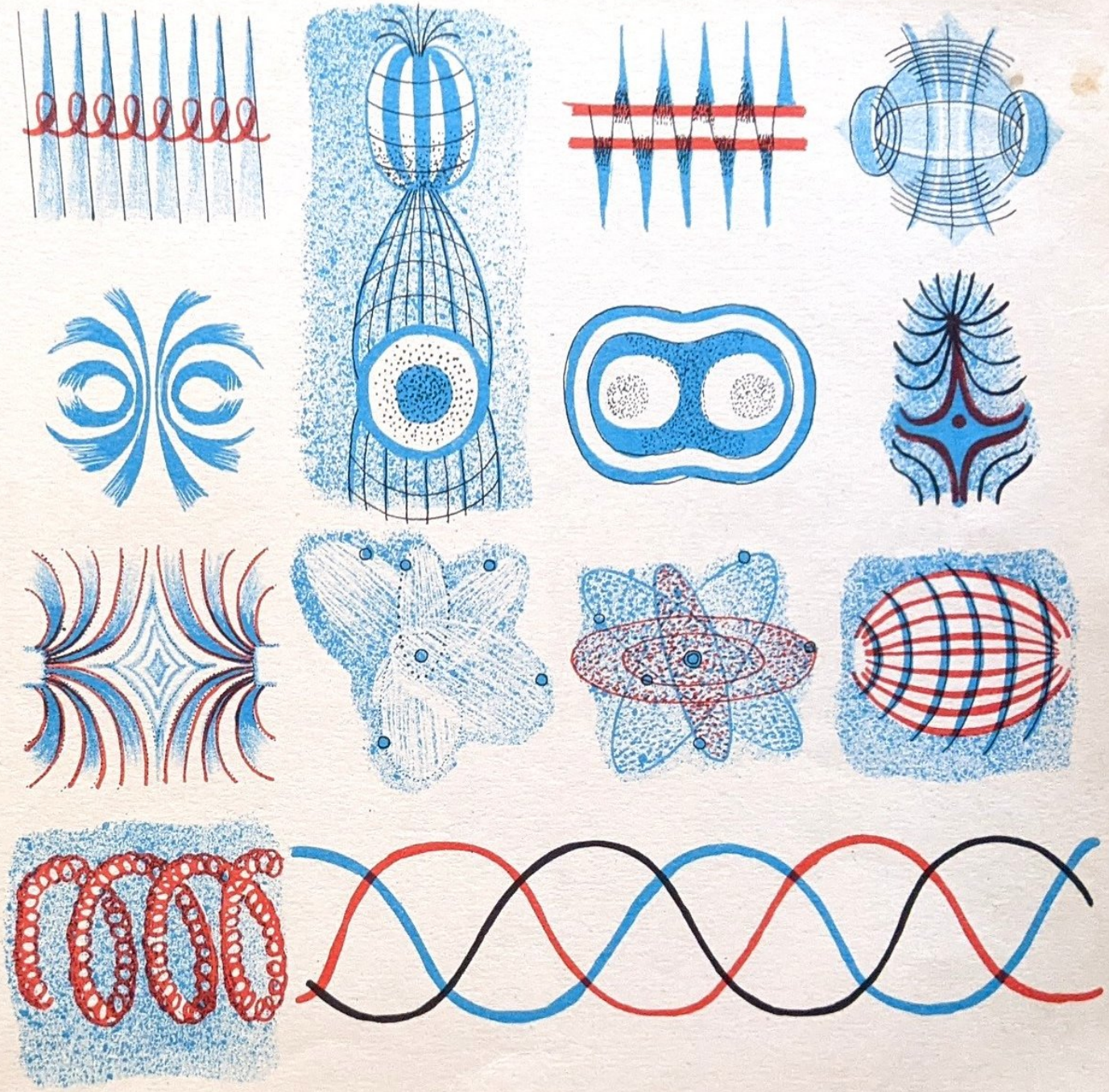
There are some off the coasts of England, but the brightly coloured ones are mostly found amongst the tropical islands.

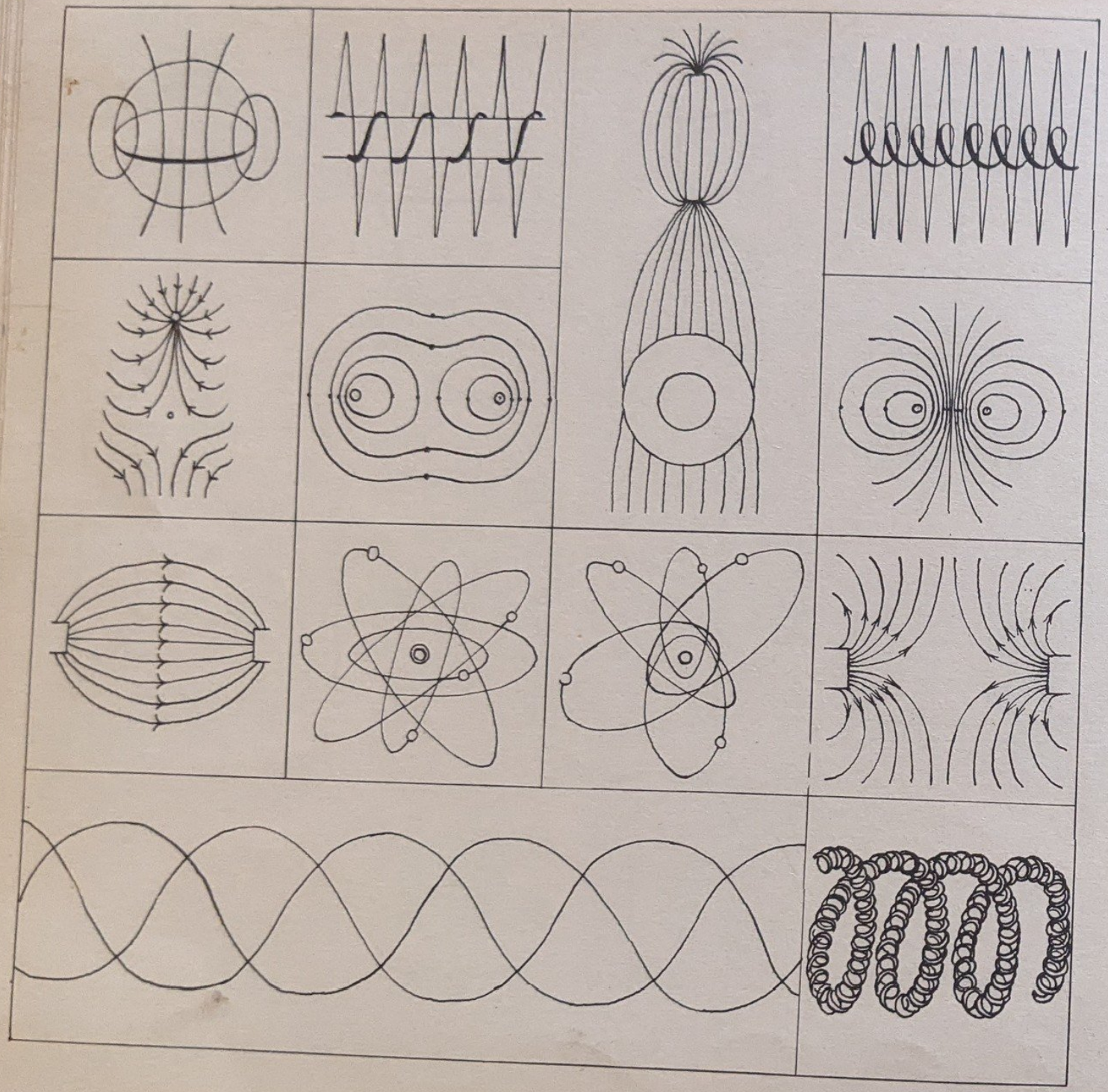
Many museums have examples of coral skeletons.



1 Fungia fungites
2 Sponge
3 Paniculata from Barbados
4 Calligorgia from Barbados
5 Section of Polypoides
6 Siderastrea siderea
7 Polyps extended
8 Coral skeleton
9 Dendrophyllia axifuga from West Australia
10 Sea-pen
11 Diploria cerebrum
12 Spicules of sponge
13 Sea-pen
14 Reef Coral
15 Millepora alcicornis from West Indies

CORAL AND SPONGE





SCIENCE

The patterns of science are so oppo
to the patterns of nature that it is
well to keep them apart and not
them when making a design. The
on this page are mostly connected
electricity; but plans, elevations, sci
tific diagrams and graphs all sugg
pattern ideas, whether as single mo
to be repeated, or as all-over designs
a geometric basis.

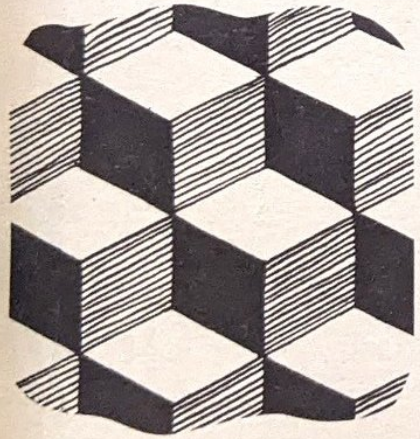
While mentioning geometry, th
are still endless simple and intric
patterns which can be formed wit
compass and other mathematical
struments. These can either be trea
with fine lines, or the spaces betw
could be masses of colour.

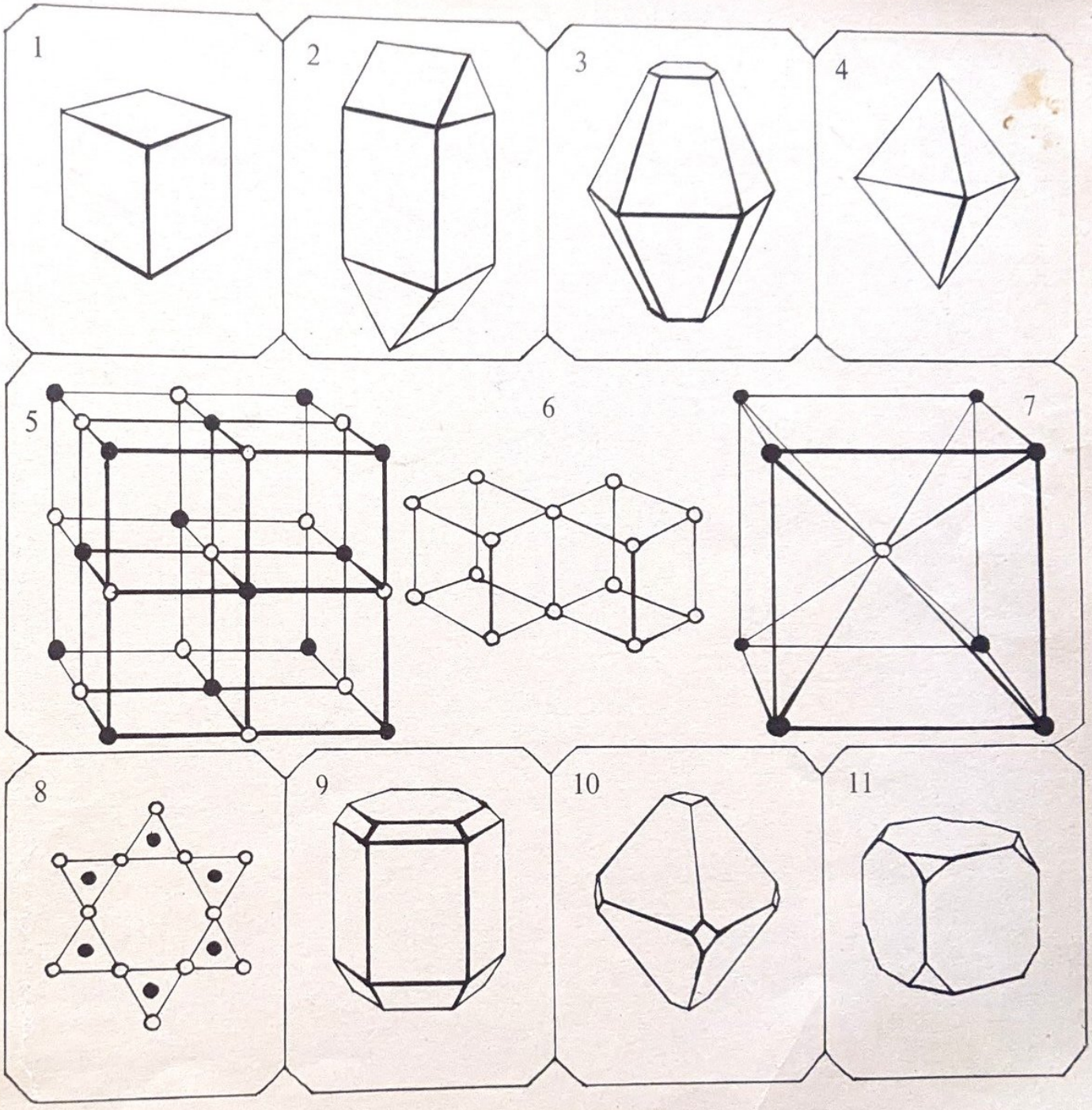
Many curious patterns are formed
multiple flash photographs of mov
objects – the usual interval of time
tween pictures being 1/100 second a
the exposure of each picture 1/1,000,0
second.

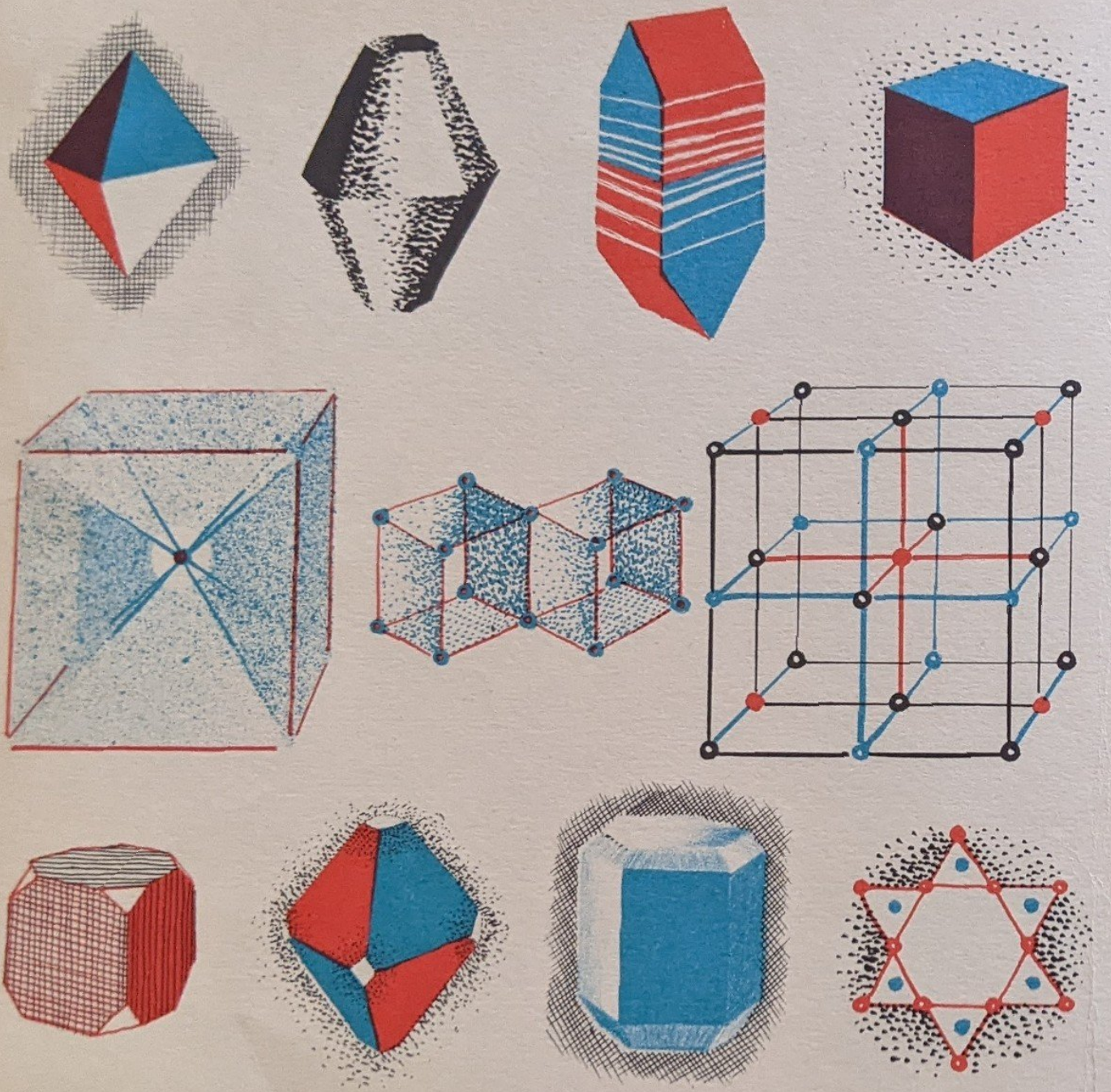
MINERALS

Crystal formations and minerals can be found in the mineral section of a Natural History museum, or in the Geological Museum at South Kensington. They could be used as motifs or repeated in the formations which are suggested by their shapes. These can be drawn either in plan form or in the third dimension.

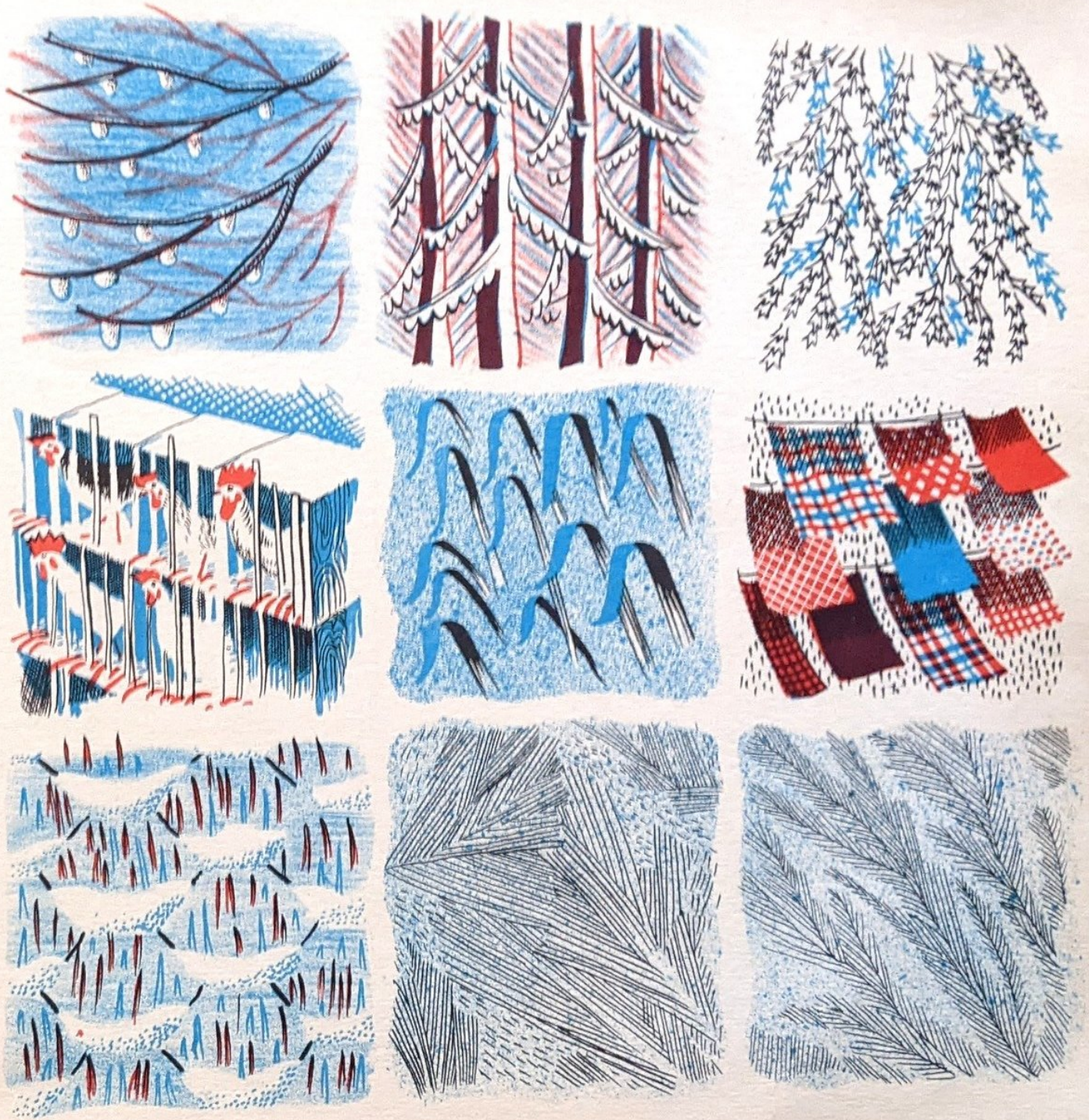
1 A Cube
2 Epsom Salt Crystal
3 Rhombic Sulphur
4 An Octahedron
5 Atoms in a lattice of Potassium Chloride
6 Molecule of Chlorine
7 A body-centred lattice
8 Linking pairs of Silicon Atoms
9 A Beryl Crystal
10 An Alum Crystal
11 A Combination of Cube and Octahedron



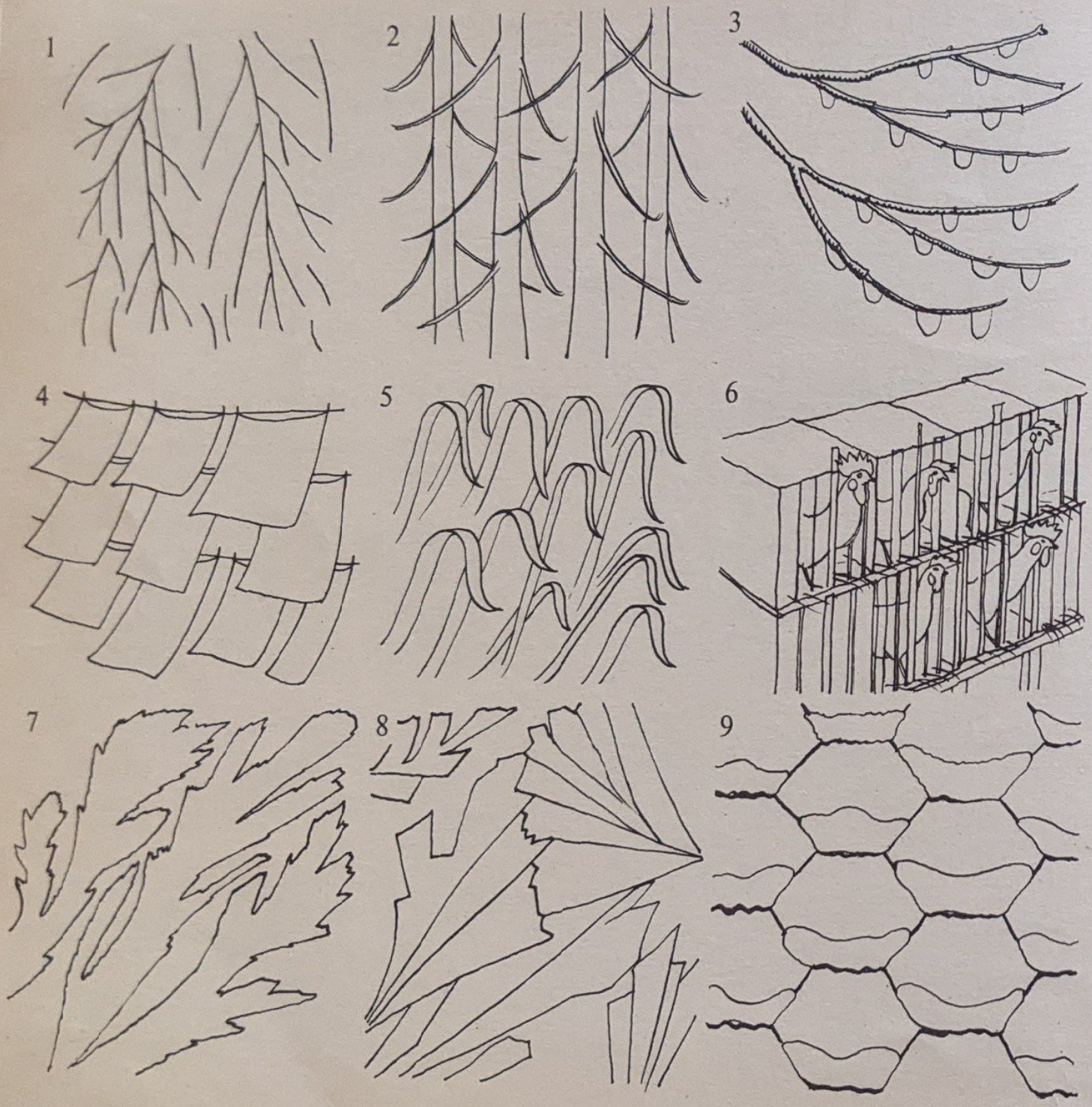




CRYSTAL FORMATIONS
AND MINERALS



LOOKING ALONG



LOOKING ALONG

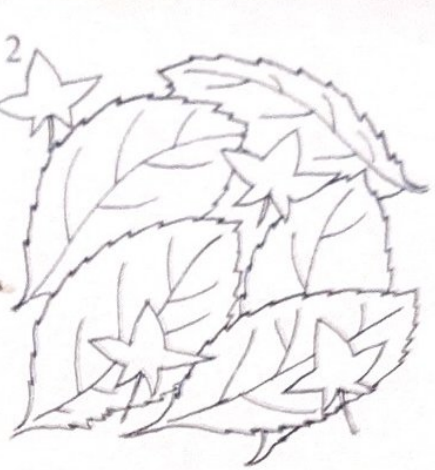
Here are nine patterns sketched fro observations made of actual scenes, b the colour schemes have been adap to fit the limitations of two colours a black. It is easy to see how surround we are with pattern formations where we may be.

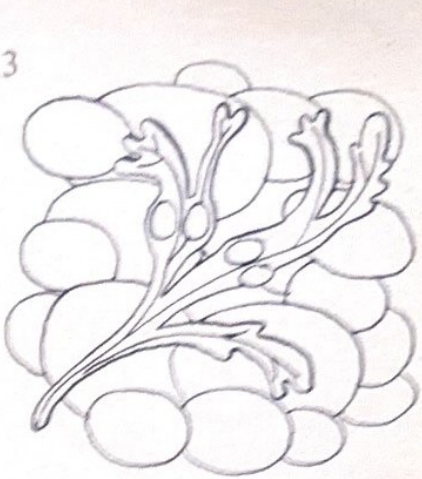
1 Looking at a hedge of cypress bush
2 Standing in a wood of fir trees
3 Raindrops slithering along the branc of a sloe bush
4 Monday's washing
5 Grasses in the sun. The actual bl appeared pale blue amongst the g grasses in the sunshine
6 Poultry in the market of a nearby t
7 & 8 Frost on the window panes. Dr from inside the room in the winter
9 Snow left on wire netting after the sn had finished falling

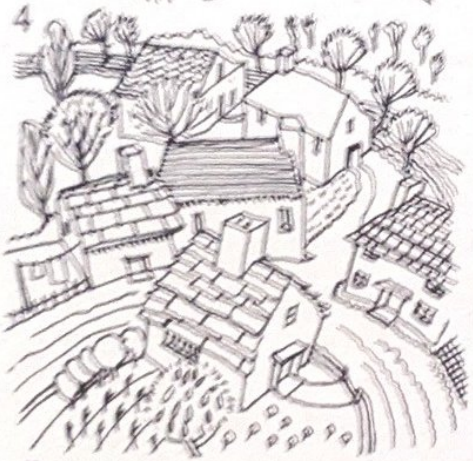
LOOKING DOWN

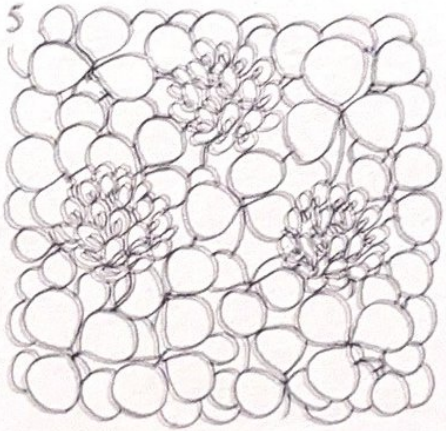
When out walking, wherever you happen to be, there are things waiting to be looked at, be they hard pavements, soft gravel, wet roads or footmarks in the snow. Some immediately suggest repeat patterns, while others are "motifs" on their own.

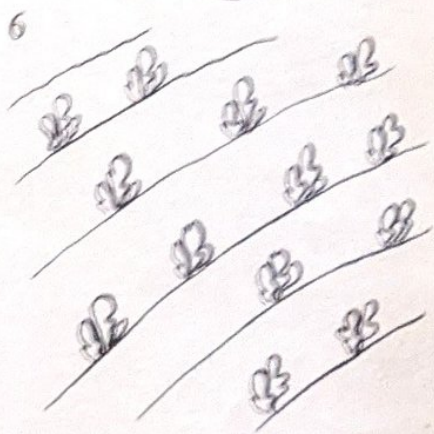
1 Looking down at the leaves of a golden rod plant
2 Young ivy leaves springing up amongst dead leaves on the ground in a wood
3 A piece of seaweed lying amongst the pebbles on a beach
4 Looking down at a small village in Dorset
5 A carpet of pink clover plants directly at my feet
6 Plants growing in a ploughed field
7 Plan of an ordinary street imagined from directly above
8 The sand on the sea-shore when the tide has gone out
9 A large pile of logs seen near an oast-house in Kent

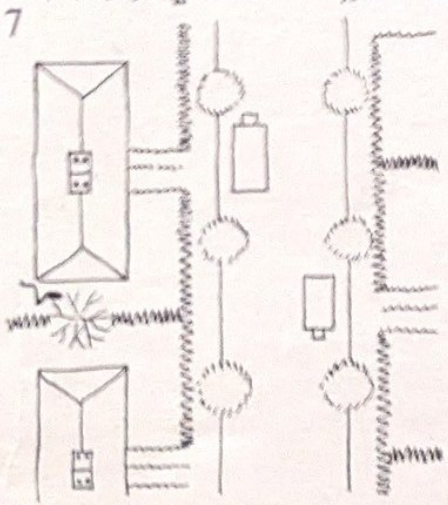


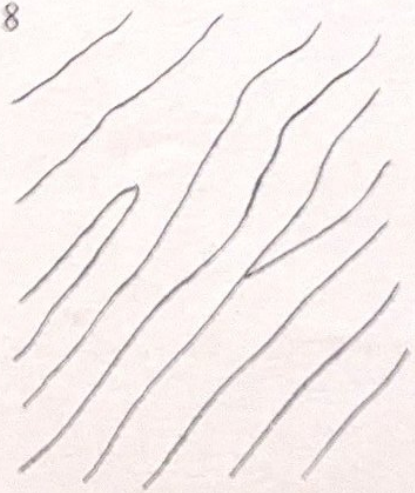


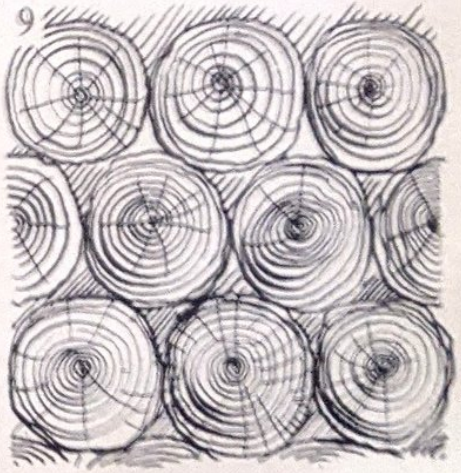


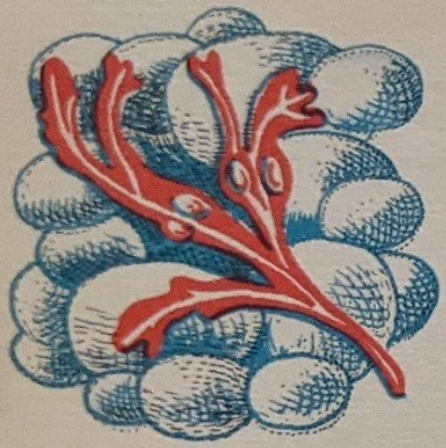


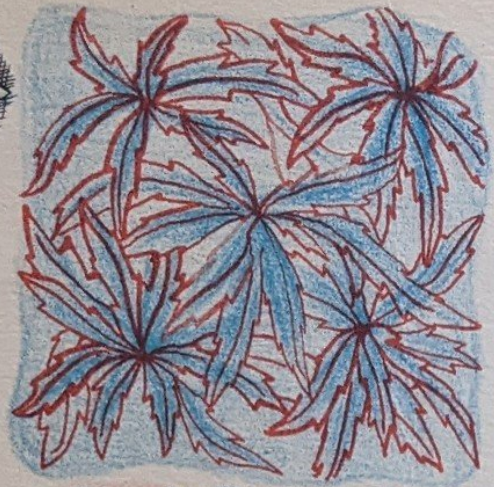
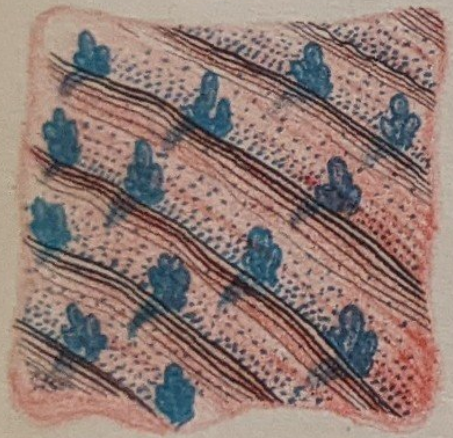


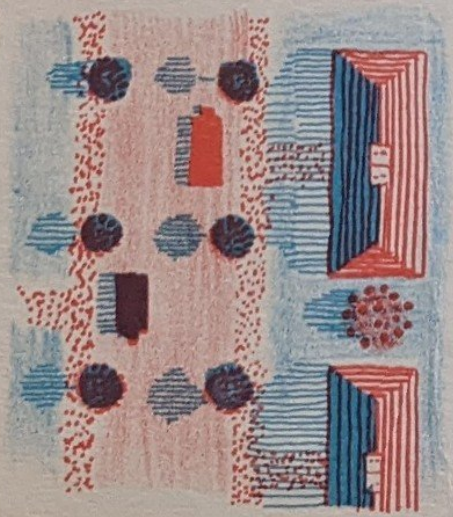






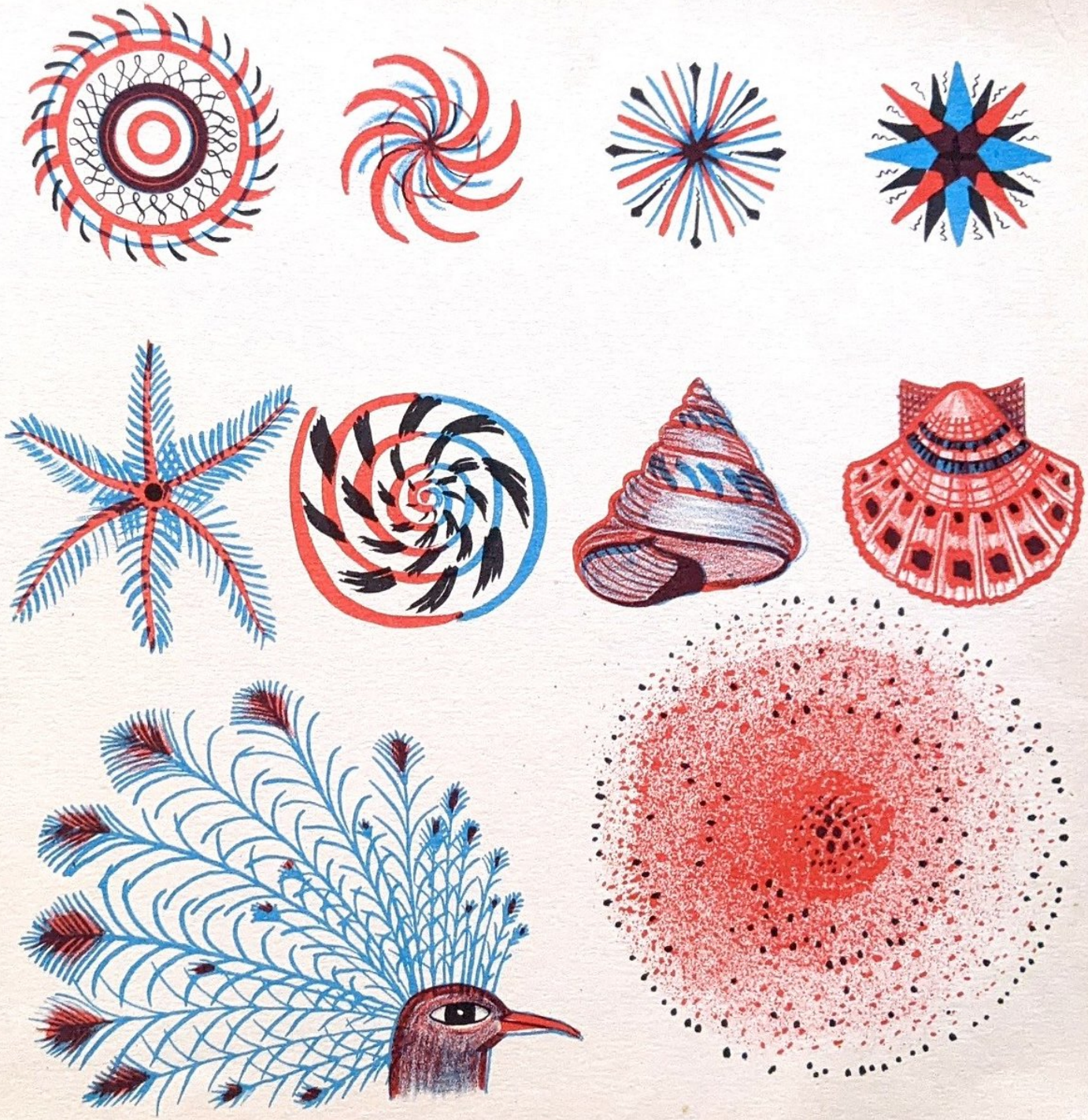


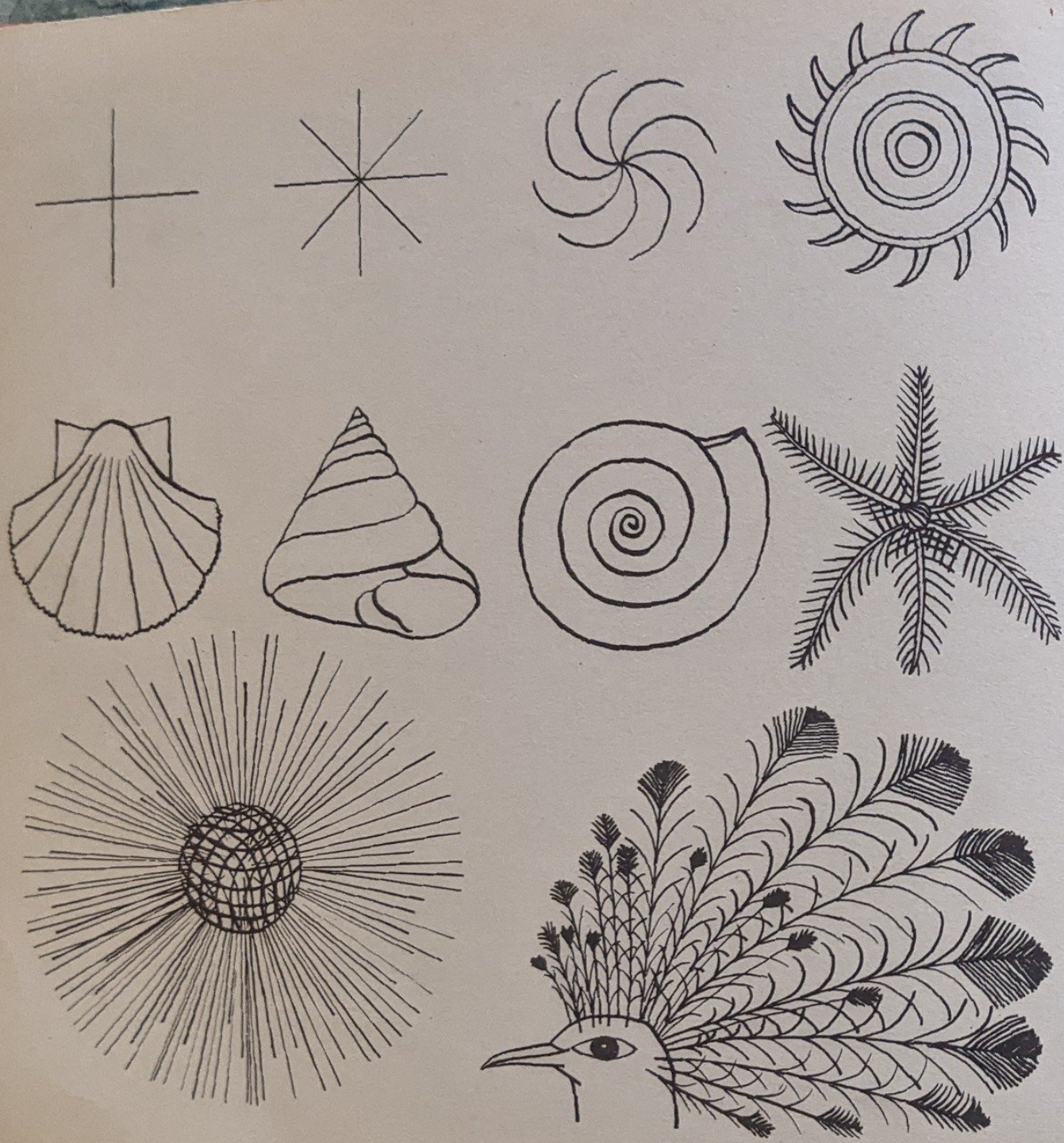


LOOKING DOWN

PATTERN GROUPING



RADIATION

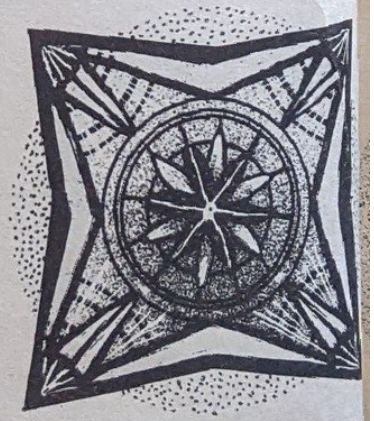


RADIATION FROM A POINT

In the world of Pattern, similarities o construction can be seen and in th drawings on this page there is a centr point from which the lines are radiating Amongst this group are included th starfish, shells and many flowers an leaves. Much of the sea's vegetation ha a radiating construction of a third di mensional form. Flowers such as daisies poppies and roses, all radiate in a pla form from a centre point. Many leave also, like those of the horse chestnut plane tree and ivy, follow this constru tion.

From simple lines crossing one an other and from more complicated one based on the radii of circles ma simple or intricate motifs can be in vented. Also under this heading com cross-sections and many scientific d signs done with the aid of a compas

A pattern could radiate from a po outwards, or converge inwards fro several points.

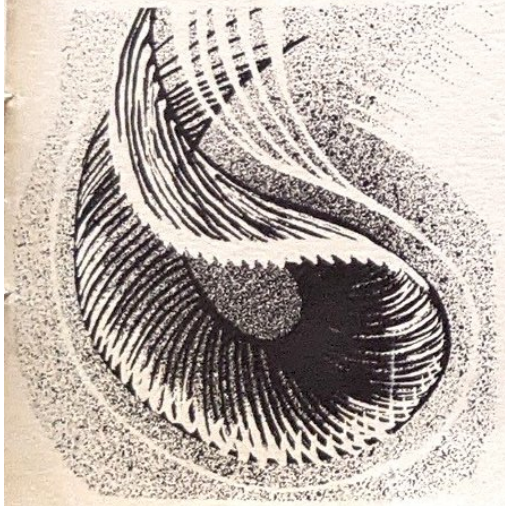


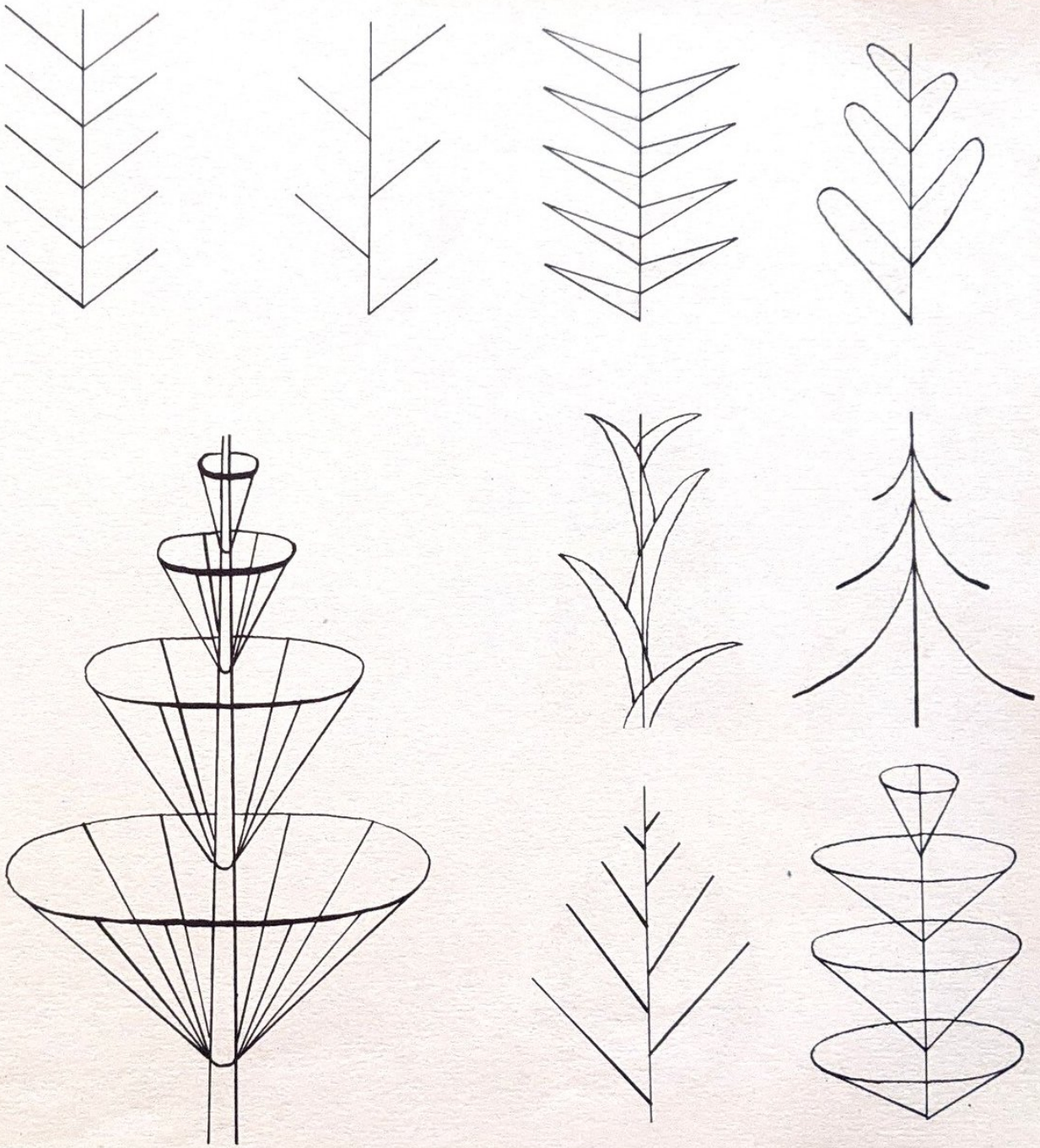
RADIATION FROM A LINE

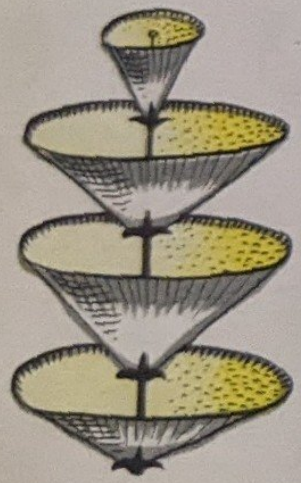
Not only can lines radiate from a point, they can also radiate from another line. Ears of corn and leaf shapes have this construction, and many a flower or seed when cut in a longitudinal section, shows a centre line from which other lines radiate – this formation giving a feeling of growth.

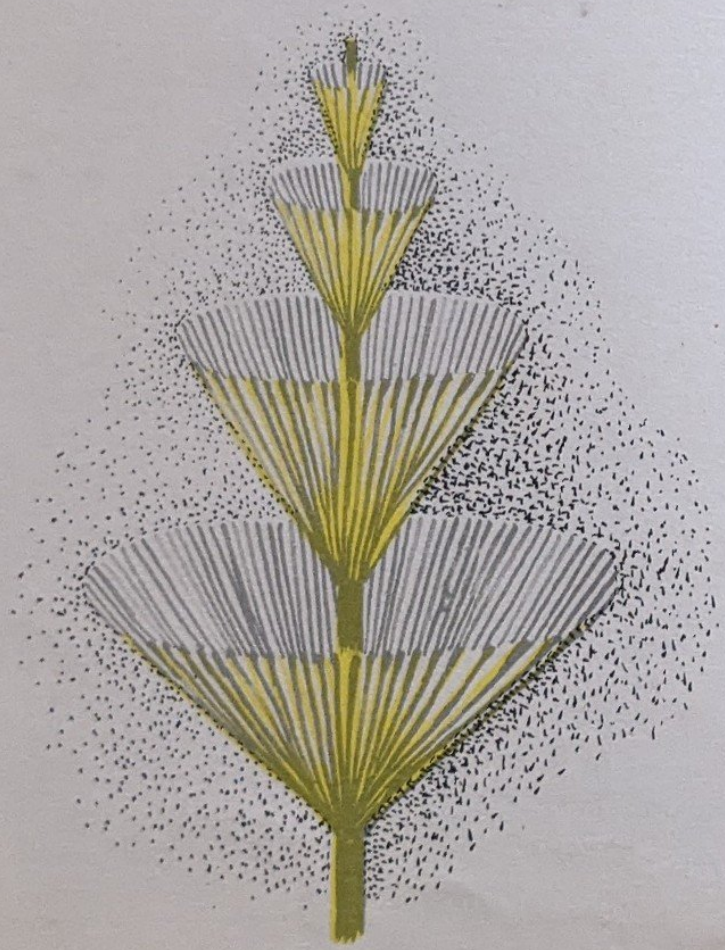
Lines may radiate in a flat plane or rotate about a central line.

Apart from being upward, downward or at right angles, the lines may be at equal distances or in a sequence. A line can branch out from another line at an angle or in a curve, so that the secondary line springs from the main line in a continuous sweep. This latter construction is known as Tangential Junction, and the curve appears more peaceful than when the line springs out at an angle, as is the case with thorns and prickles. It is wise to avoid mixing the two methods in the same design, but that again depends on the required effect.

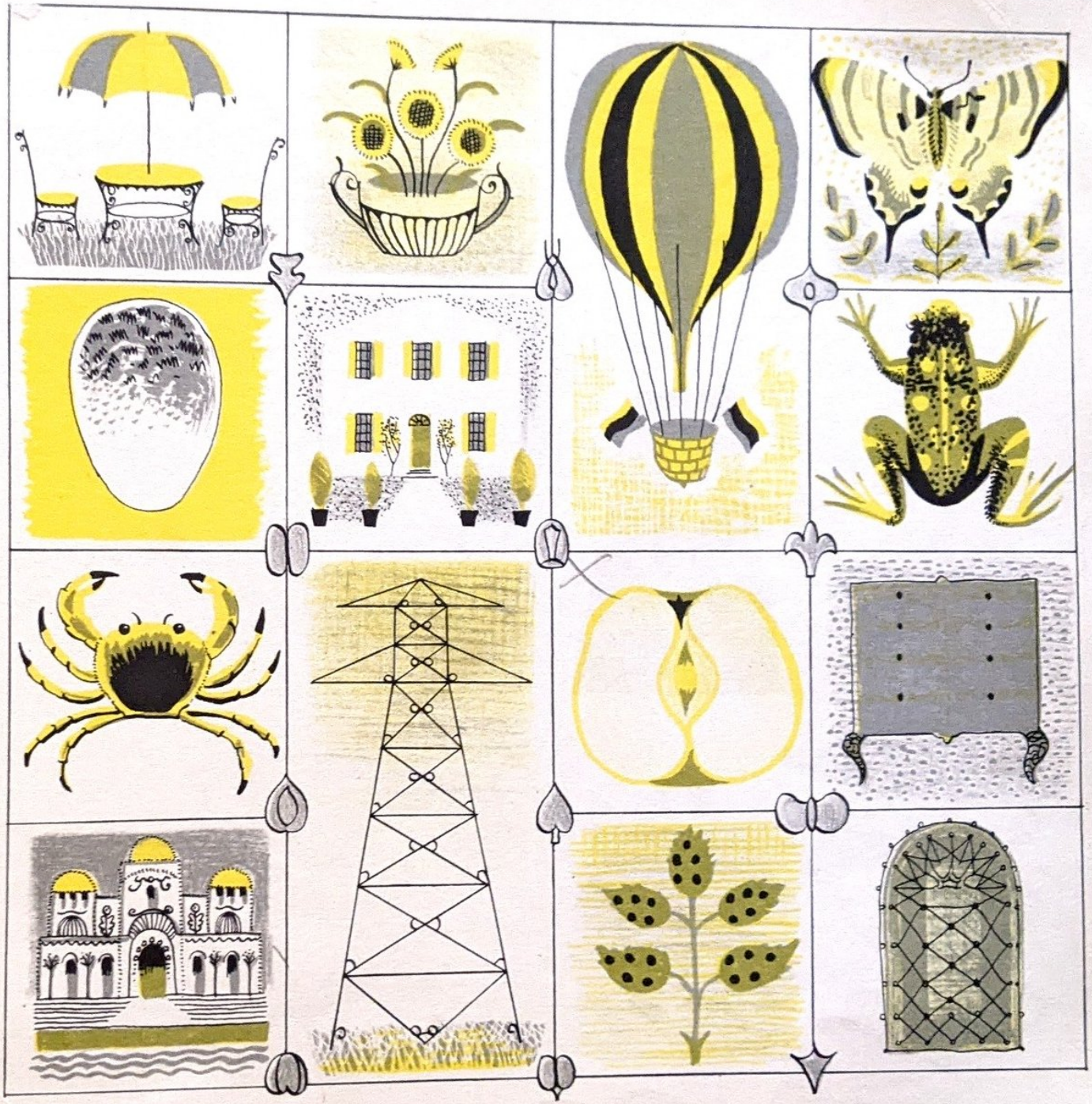




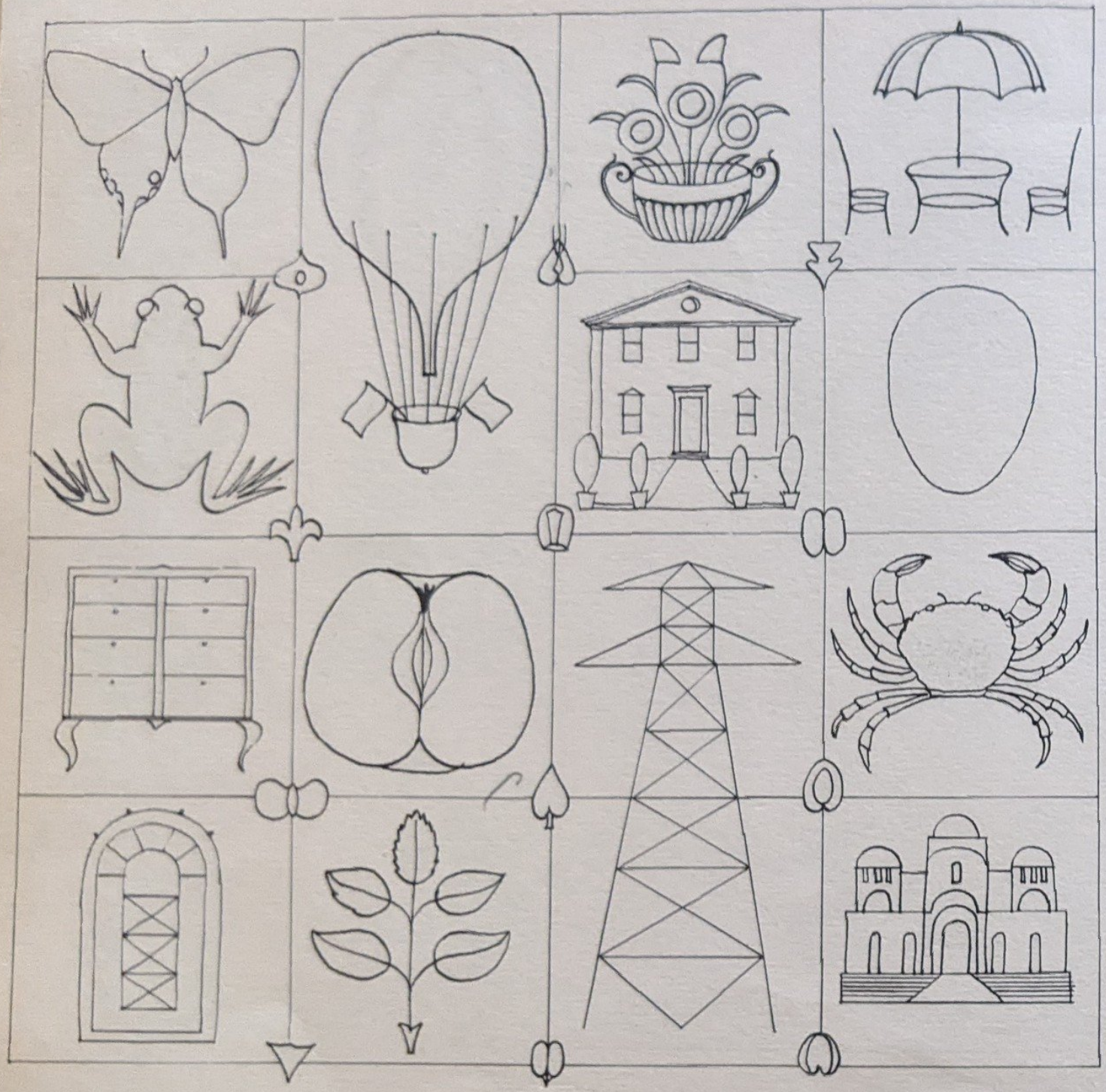




RADIATION FROM A LIN



SYMMETRY



SYMMETRY IN ONE DIRECTION

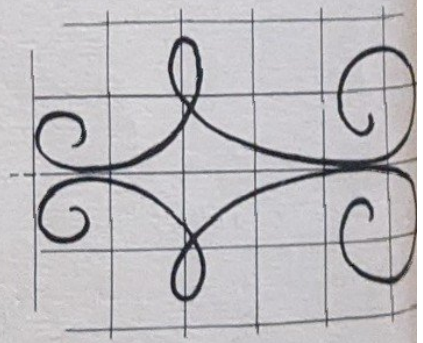
If a design can be divided by a line into two identical portions then the design is said to be symmetrical.

Many natural objects fall under this heading, and each one is a complete design in itself, from the merest seed case to human beings.

Symmetry appears so very satisfactory to the eye that numberless man-made objects come under this heading. Plans and elevations of buildings down through the centuries have often been symmetrical, and at the present time much of the furniture in our houses, and also the vehicles in which we travel.

A piece of paper folded and cut through the double thickness when opened up will give a symmetrical shape in one direction, and the merest squiggle accurately repeated opposite a central line becomes a design.

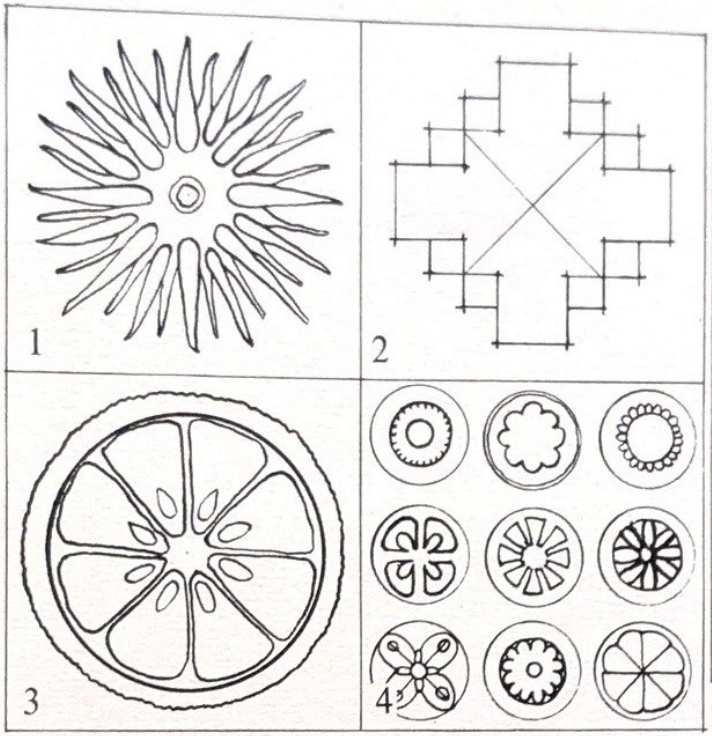
The small motifs on this page between the large ones are from the various seed cases of flowers.



SYMMETRY IN TWO DIRECTIONS

Apart from being symmetrical about a single line, designs can be symmetrical in two directions or more. Many minute animal forms and plant life come under this heading.

It will be necessary to repeat the design more than once, but when it has been satisfactorily roughed out, it is simple enough to draw one corner accurately and then to turn over the tracing for its opposite number, in order to make the shapes identical.

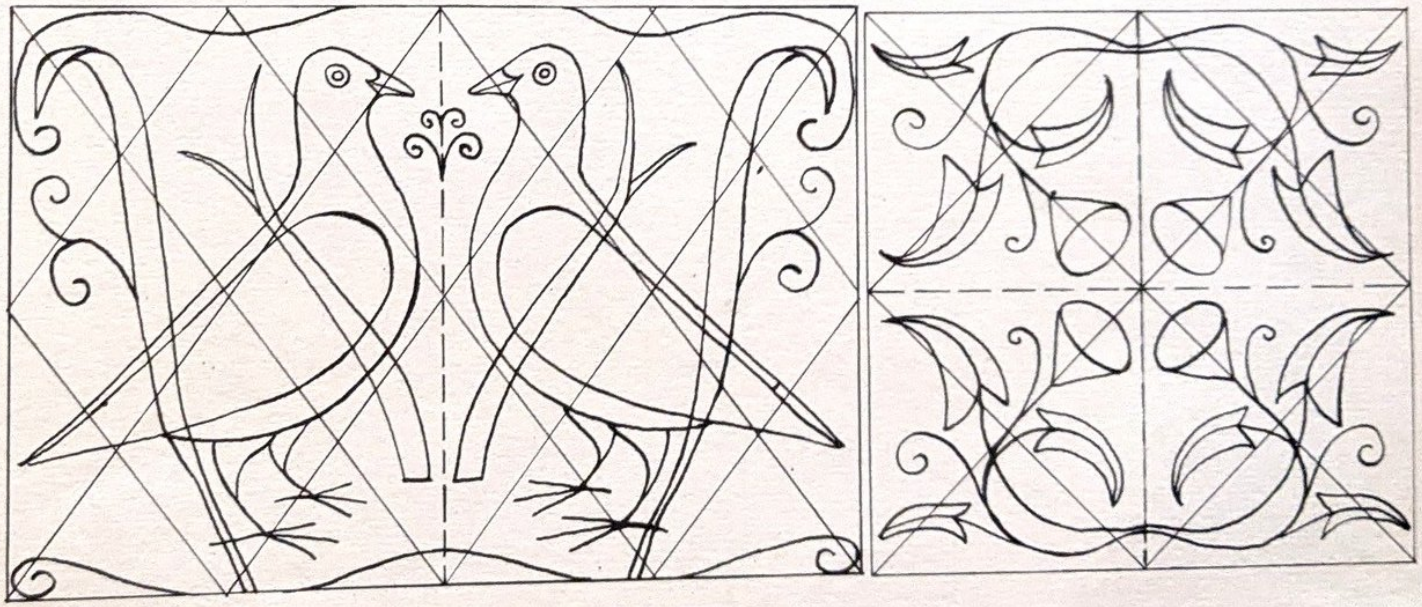


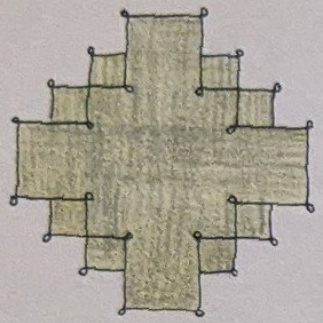
1 Sea Anemone
2 Plan of Building
3 Fruit section
4 Flower and Seed sections
5 Construction of Snow Flakes

UNITS PLACED SYMMETRICALLY

Many units which are unsymmetrical themselves can be placed opposite one another to give symmetry. Designs can be built up in this way, for example, the one here of pigeons. When planning these, tracing paper can be turned over to get the identical shapes.

For symmetry in more than one direction, four units or multiples of four can be used, as in the flat convolvulus design shown here.





SYMMETRY
IN TWO DIRECTIONS

UNITS PLACED
SYMMETRICALLY

BALANCE

BALANCE

Balance is difficult to define, but it is 'a state of order and stability' without being symmetrical. Plants are usually perfectly balanced, some of the best examples are trees, no two being alike, even in the same species, and when allowed to grow naturally they make a balanced design and do not appear top heavy.

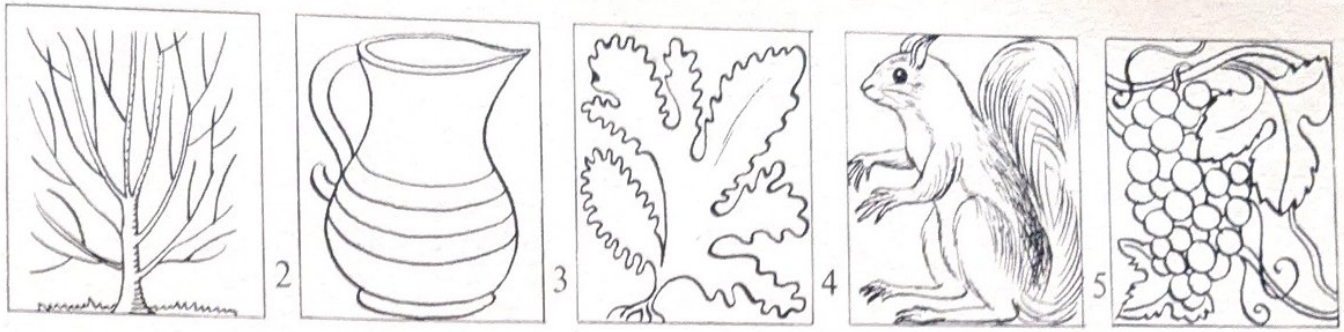
When starting a flat design, a symmetrical basis could be used, then gradually the main lines could be varied to achieve a balanced effect. A good test is that the design should still look well when its surrounding border or construction lines have been removed. Experience and good taste are necessary. If a piece of pottery or a building should look top heavy, then it could hardly appear satisfactory to the eye.

The four flat designs here have been designed to fill a space without being top heavy in any one part. The pairs of animals were drawn first, one animal occupying more space than the other, and the simple backgrounds were sketched in later.

(Greeting Card designs by permission of the Ward Gallery)

Examples of Balance:
1 A tree
2 A jug with pattern on lower half
3 A piece of seaweed
4 A squirrel
5 A bunch of grapes

These designs still fill a rectangle when the outside lines are omitted.



CONTRAST AND VARIETY

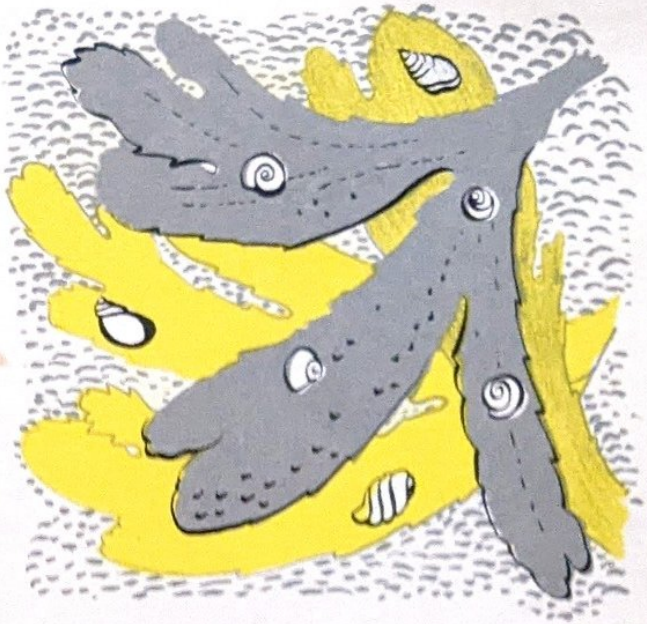
Contrast and variety are essential parts of pattern design if monotony is to be avoided. There are many methods of achieving these. Line, form, texture and colour are all simple ways of showing contrast, and in the world of pattern nothing is monotonous. It is only in the machine age that vast quantities of identical objects have been turned out.

In nature the examples are endless, and a few different treatments of leaves have been drawn to show the variety which can be obtained. By placing the differences between them side by side, the greatest contrast is shown.

1 Rough and smooth
2 Thick and thin
3 Large and small
4 Line on mass
5 Dark on light
6 Pattern and plain
7 Raised and flat
8 Clear and dim
9 Straight and wavy
10 Dull and shiny
11 Limp and stiff
12 Light on dark

BALANCE

CONTRAST AND VARIETY



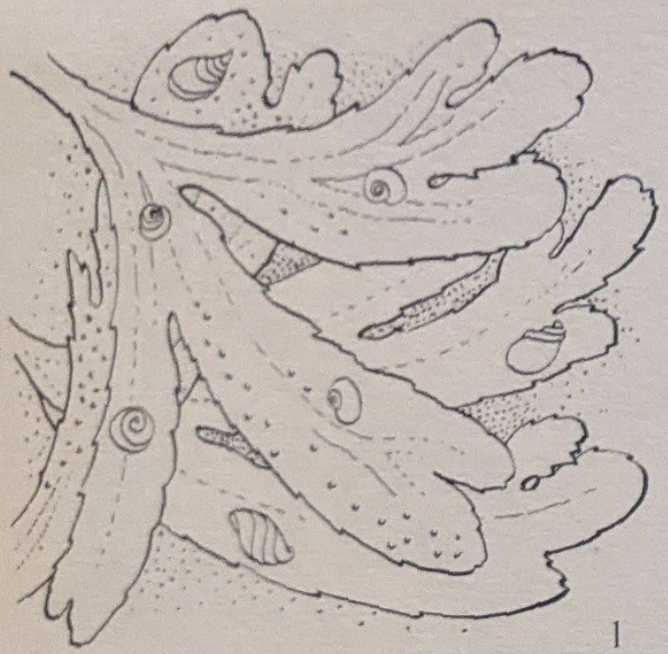
CONTRAST
OF SMALL ON BIG

CONTRAST OF SMALL ON BIG

Many textures come under this heading, and it is by varying the textures that monotony can be avoided.

A main design in which a lesser one has been superimposed to give a required effect is known as Superposition.

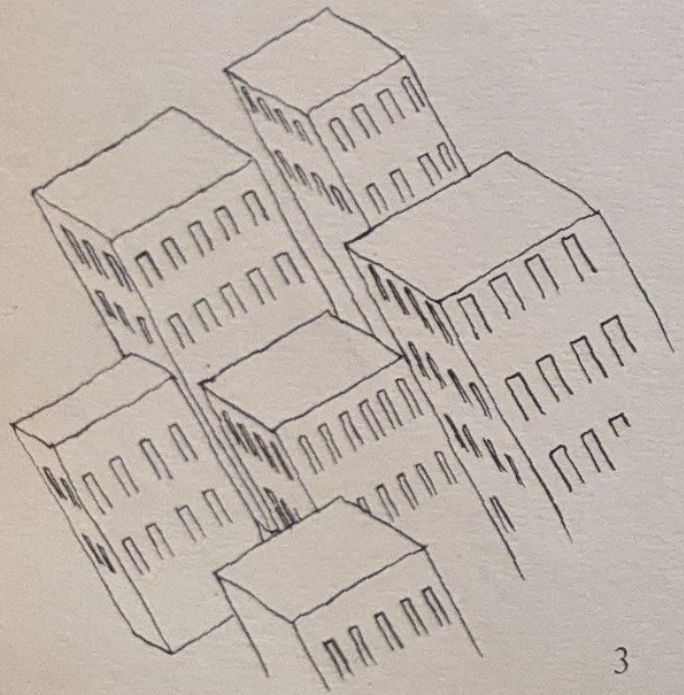
Birds with their patterned feathers, fish with their scales and flowers with coloured spots are all designs in themselves with textures added. When the same basic shape is used over and over again, variety can be obtained by alternating the placing of the textures.



1

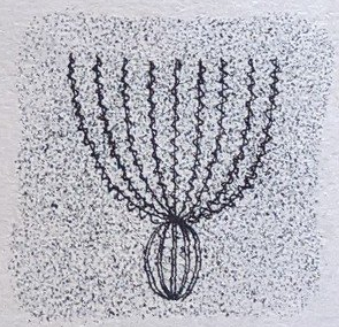
2

1 Shells on a background of seaweed
2 Animals dotted about on a pasture
3 Windows breaking the monotony of walls
4 Various feather effects on a turkey cock



3

4

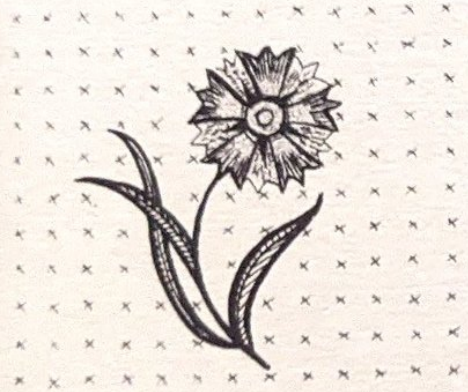


CONTRAST OF BIG ON SMALL

Not only can small textures be placed on the top of various shapes, but large shapes can themselves be superimposed on a background which already consists of some design.

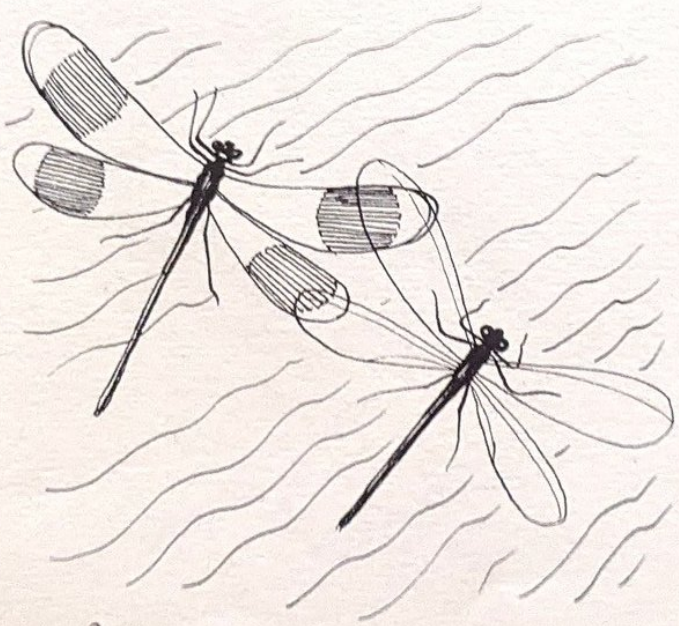
This has frequently been done in embroidery, as in the example given below, but in nature it occurs so often that a few examples are given on this page, in order that new observations can be made.

1 Solid bird forms on thin branches
2 Sea horses with a background of waves
3 Damsel flies hovering over water
4 Bear climbing up wire netting



1

2



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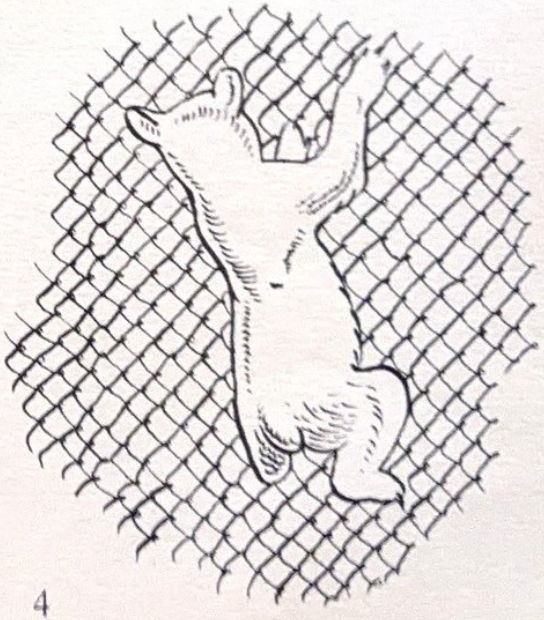

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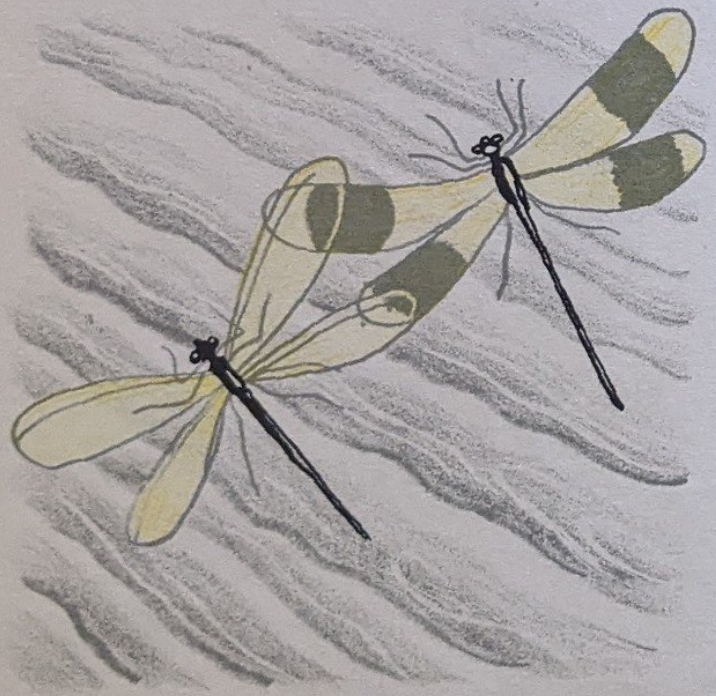
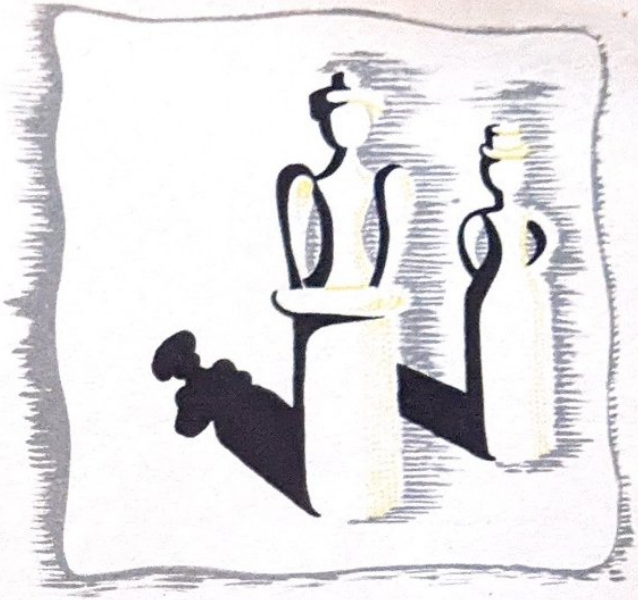
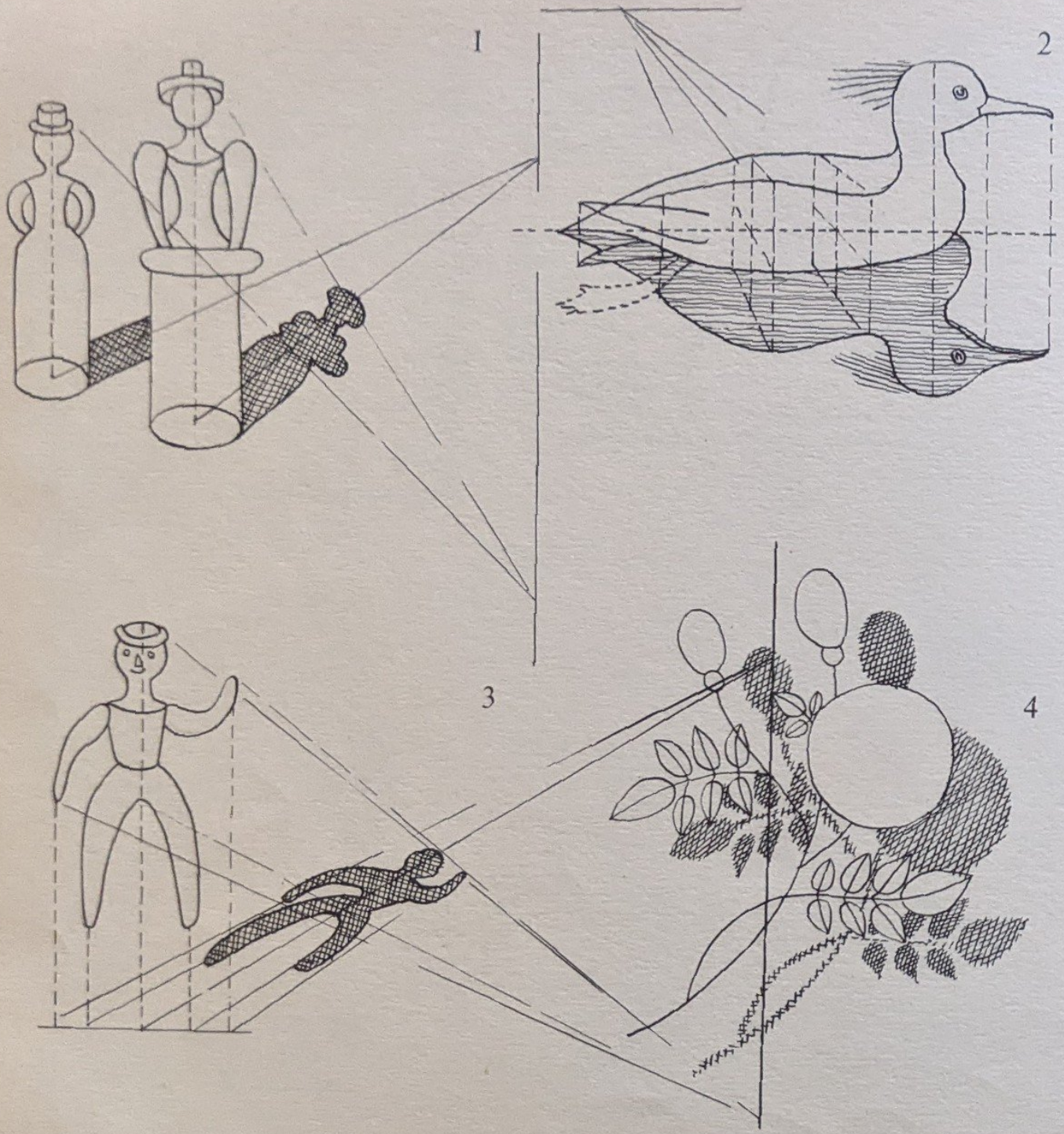


CONTRAST
OF BIG ON SMALL



THE
CONTRAST OF SHADOWS



THE CONTRAST OF SHADOWS

Everything would indeed look flat if it were not for shadows, and the contrast of light against dark occurs everywhere in nature. There is the difference between the brightly coloured flowers and the green leaves, the dark shadows with the patches of light showing through, and the relief of single objects by cast shadows. Many shadows make curious patterns and when there is more than one source of light, such as the light from many candles, the patterns formed are quite fantastic.

A simple way of giving a raised effect is by suggesting the flat shadow in the manner of the wild rose drawn here, but numerous other ways are suggested when using the methods of perspective.

A reflection has also been shown on this page, and if correct construction lines are used for this and for shadows the added depth to the design will be convincing.

1 Shadows of wooden dolls
2 Reflection of a bird swimming in water
3 A figure jumping. The shadow gives the movement
4 Wild rose laid on a piece of paper

CONTRAST AND VARIETY OF COLOUR

The simple use of colours with their correct complementary colour is the greatest way of showing contrast, such as red with green, blue with orange, and yellow with violet, and the painting of these opposite one another in a circle is a good exercise.

There are many ways of showing variety when limited to a few colours, apart from using different sized areas.

These diagrams, which are based on arithmetic, show a variety of ways in which numbers can be arranged:

Three numbers $3 \times 2 \times 1 =$ 6 ways

Four numbers

$4 \times 3 \times 2 \times 1 =$ 24 ways

Five numbers

$5 \times 4 \times 3 \times 2 \times 1 = 120$ ways

Each number can represent a pure colour, and by mixing colours together to form new shades, even greater variety can be obtained.

The colours on the reverse side of this page are limited to two colours and black. They have been used in their pure form without shading to get dark or light tones, and without mixing to get other colours.

Red shown as 1	Black shown as 2	Green shown as 3	White shown as 4

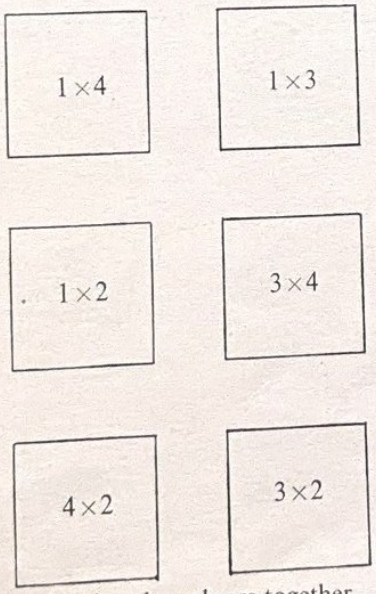
Using one only

4 on 3	3 on 4	4 on 1	1 on 3
4 on 2	3 on 2	2 on 4	1 on 2
2 on 1	1 on 4	2 on 3	3 on 1

Using two only

2+4 on 1	3+2 on 1	2+3 on 1	4+2 on 1	3+4 on 1	4+3 on 1
2+1 on 3	4+1 on 3	2+4 on 3	4+2 on 3	1+4 on 3	1+2 on 3
3+1 on 4	3+2 on 4	1+3 on 4	1+2 on 4	2+1 on 4	2+3 on 4
1+4 on 2	1+3 on 2	4+1 on 2	4+3 on 2	3+4 on 2	3+1 on 2

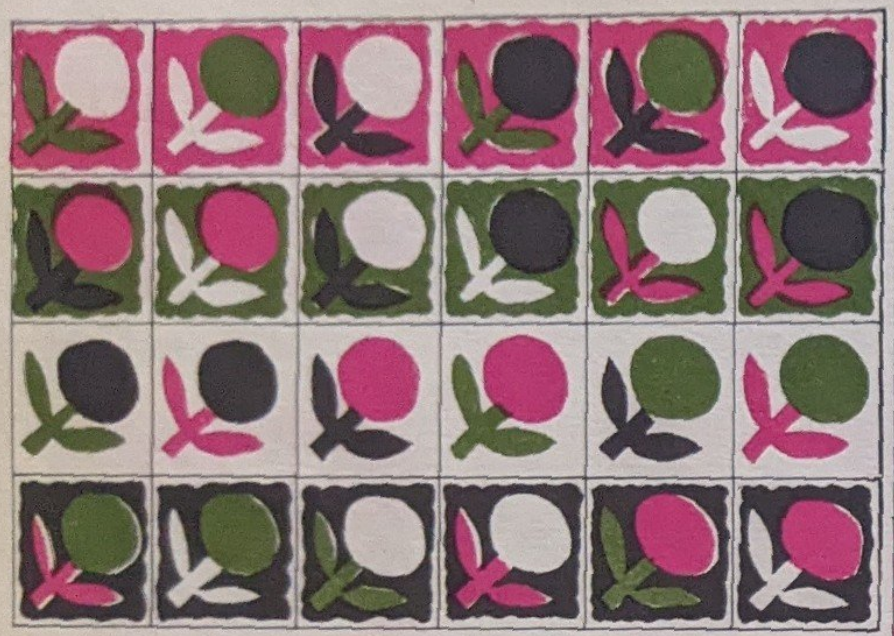
Using three colours

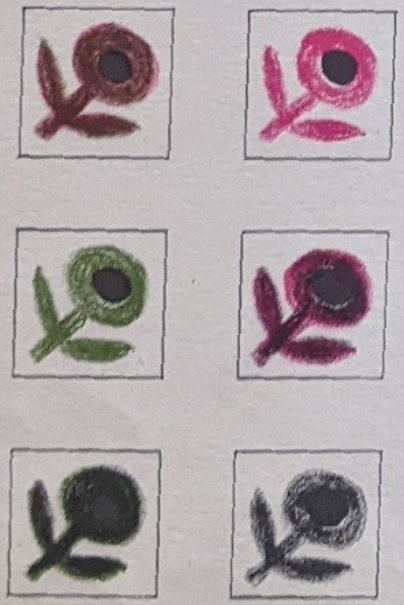


Mixing the colours together

2+4+1 on 3	2+1+4 on 3	1+4+2 on 3	1+2+4 on 3	4+1+2 on 3	4+2+1 on 3
2+4+3 on 1	4+2+3 on 1	4+3+2 on 1	2+3+4 on 1	3+4+2 on 1	3+2+4 on 1
2+3+1 on 4	2+1+3 on 4	1+2+3 on 4	1+3+2 on 4	3+1+2 on 4	3+2+1 on 4
4+3+1 on 2	4+1+3 on 2	1+3+4 on 2	1+4+3 on 2	3+1+4 on 2	3+4+1 on 2

Using all four colours

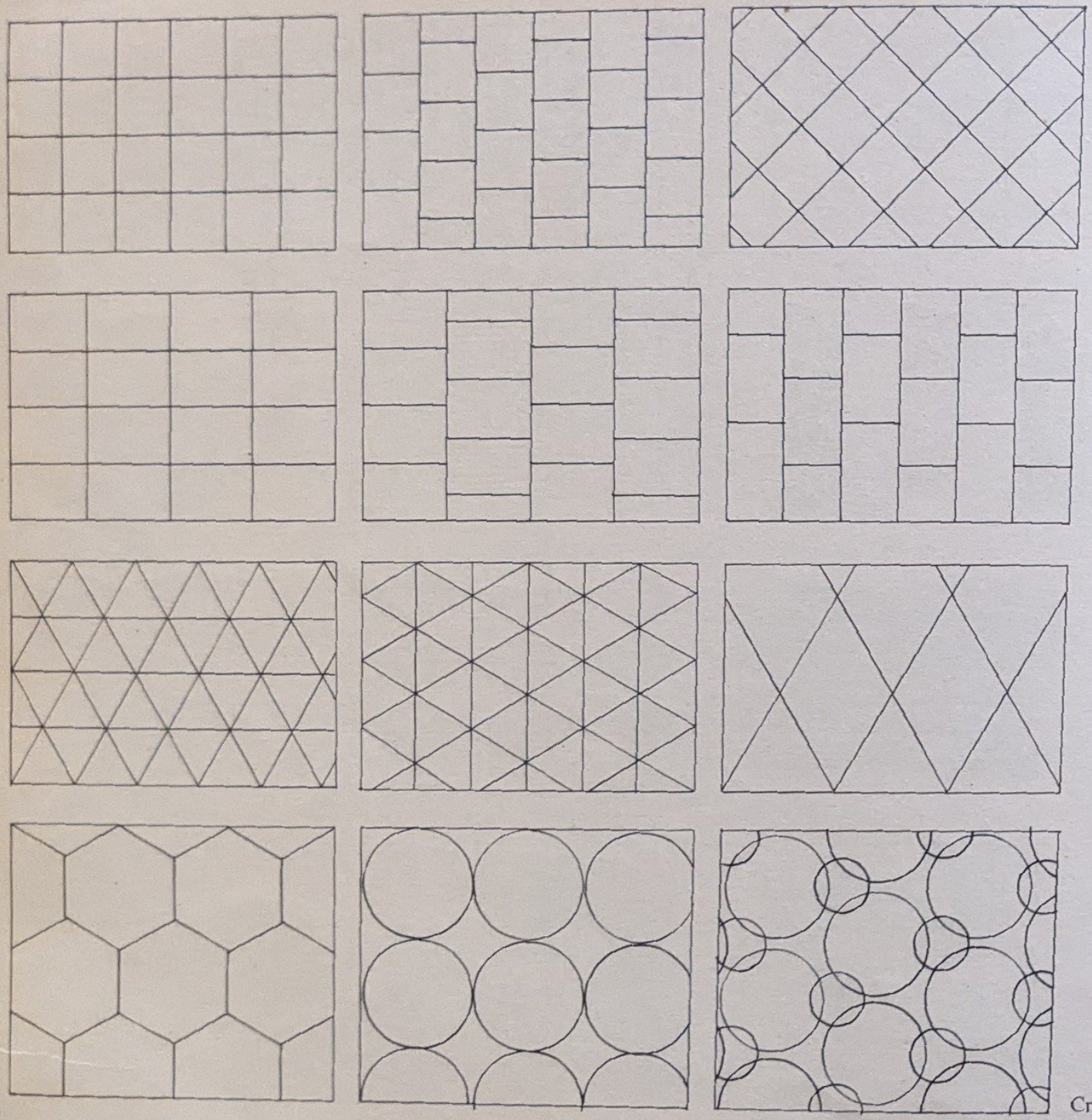




CONTRAST AND
VARIETY OF COLOUR

THE CONSTRUCTION OF PATTERNS

REPETITION



Crystal formations

REPETITION

(a) *Spaces*

In nature, the formation of crystals shows the law of repetition. They form themselves in such a way that there is no waste space, each unit fitting snugly into its next door neighbour.

In these diagrams the construction of crystal symmetry is shown in a network of lines, the plan only of these being drawn. In the first ten diagrams the pattern and the background are equal one to another, whereas in the last two, where circles have been used, there is waste space. Here each circle, although touching its neighbour, leaves a different shape between, thus forming an entirely new pattern. By dividing any of these formations in one direction or more, infinite designs can be obtained as bases on which patterns could be built, or as patterns in themselves.

The law of Repetition must be followed in designing so many things, particularly textiles and wall papers. Various mathematical 'repeats' can be used, many of these following the crystal formations.

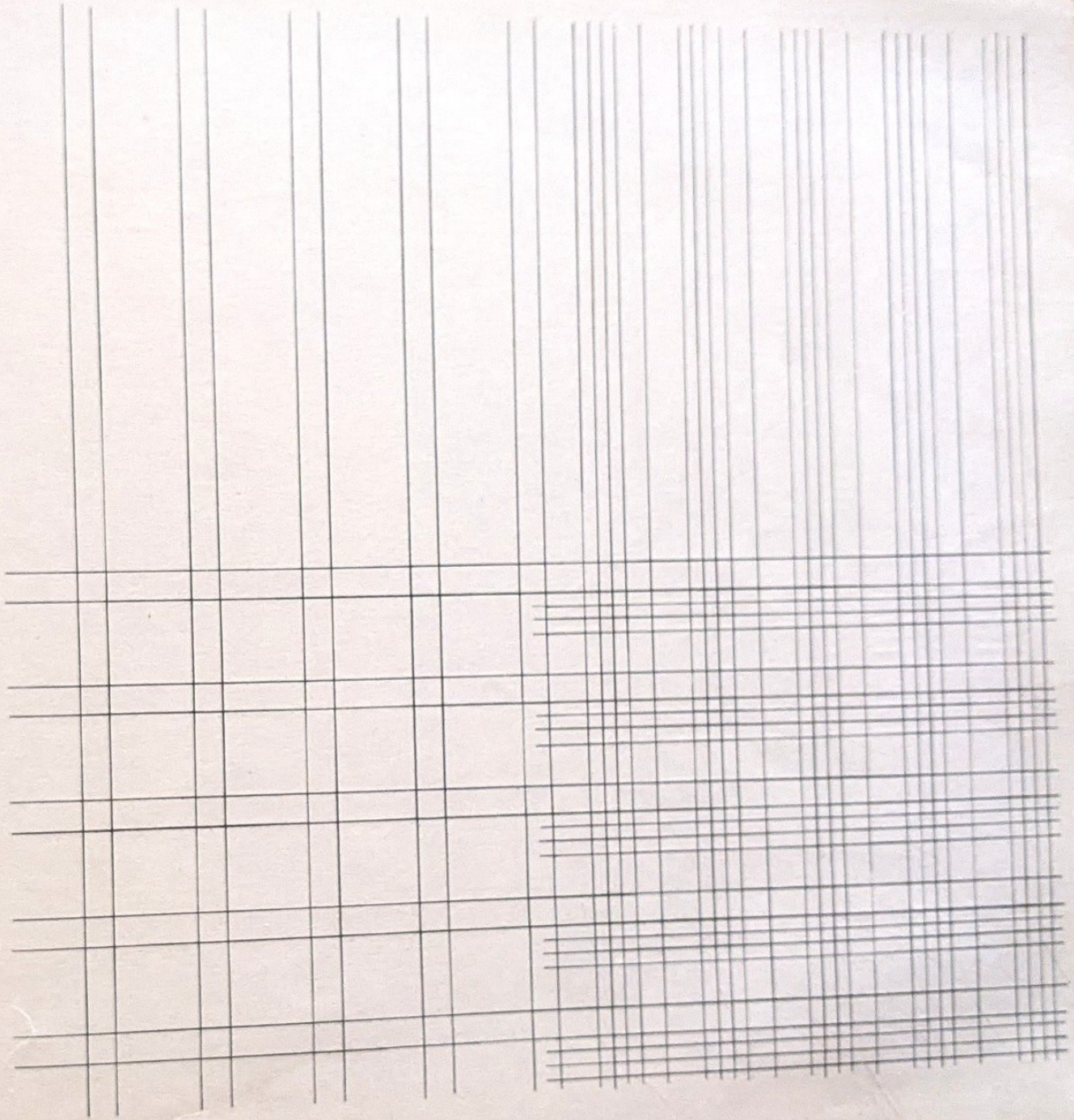
(b) *Lines*

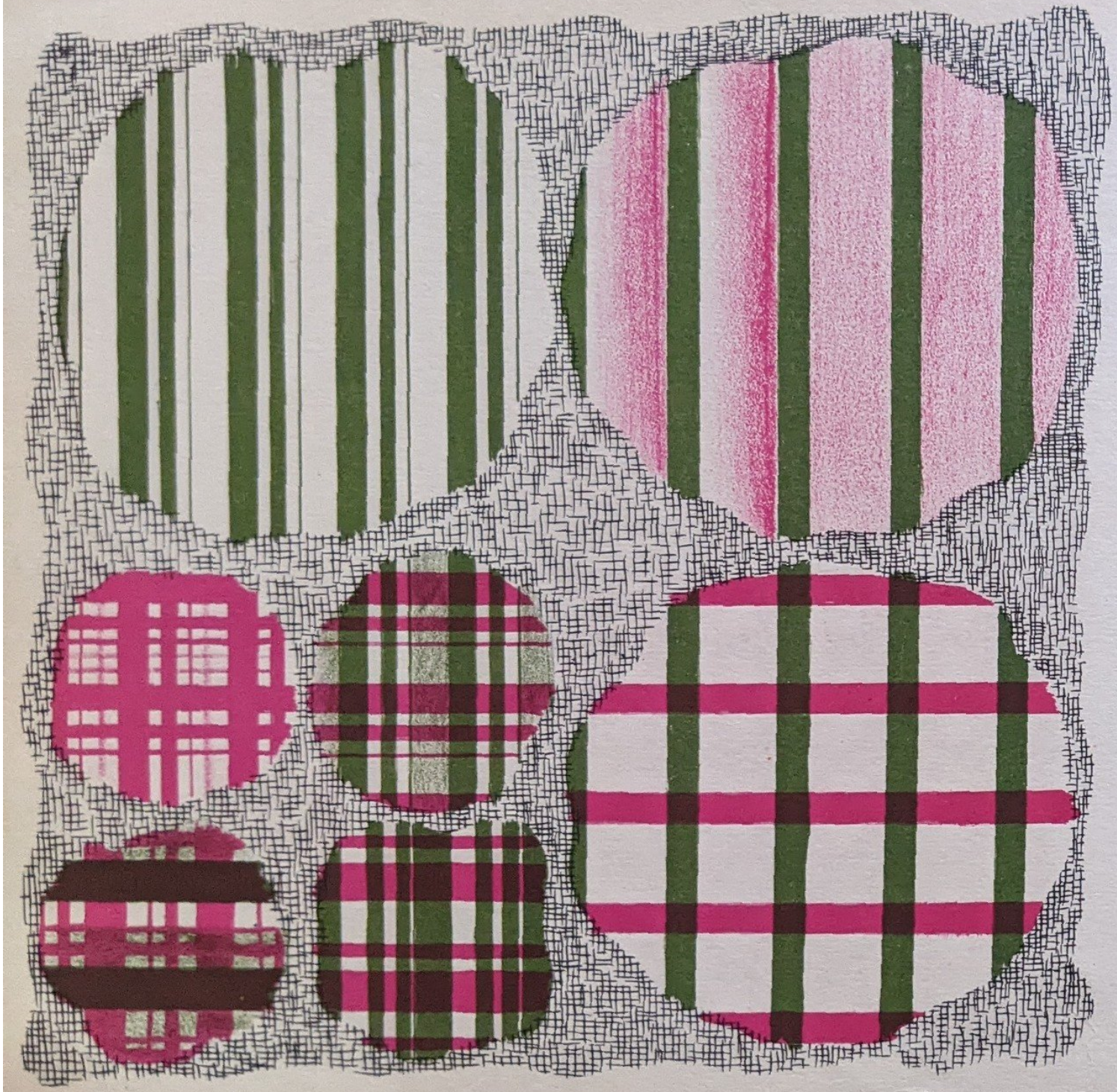
Using the law of Repetition, lines also can be formed into a pattern. A single line repeated at equal intervals, then filled in with colour or shading, soon begins to form a striped effect. There are numerous ways of repeating even a thin line, when the space between is varied. Alternatively, the line itself could be thin, thick, thicker, and colour could be added in various ways. By the addition of small units drawn at intervals, many new patterns could soon be evolved.

(c) *Crossed Lines*

When these vertical lines are crossed at right angles, the simple lines become a check, the more complicated stripes become a tartan, and again these can be varied in size or colour, with or without the addition of units.

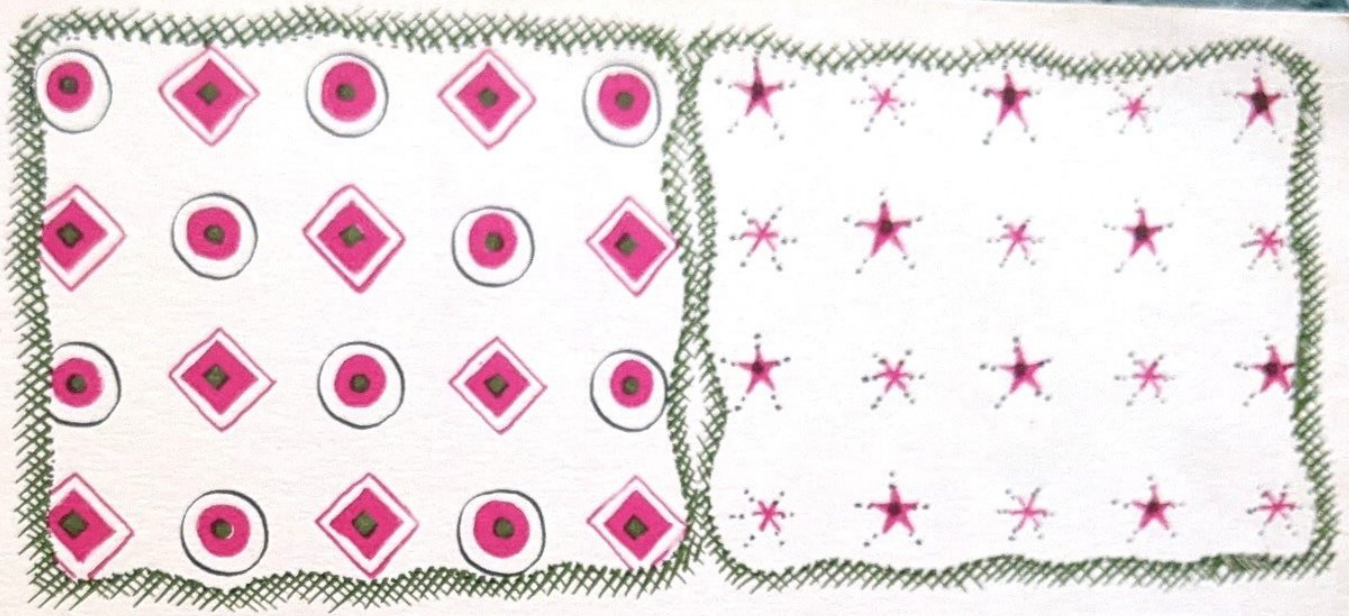
Straight lines have been used here, but diverse patterns could be obtained by the use of a curved line every now and again, or a 'kink' occurring at regular intervals.





Repetition of Lines

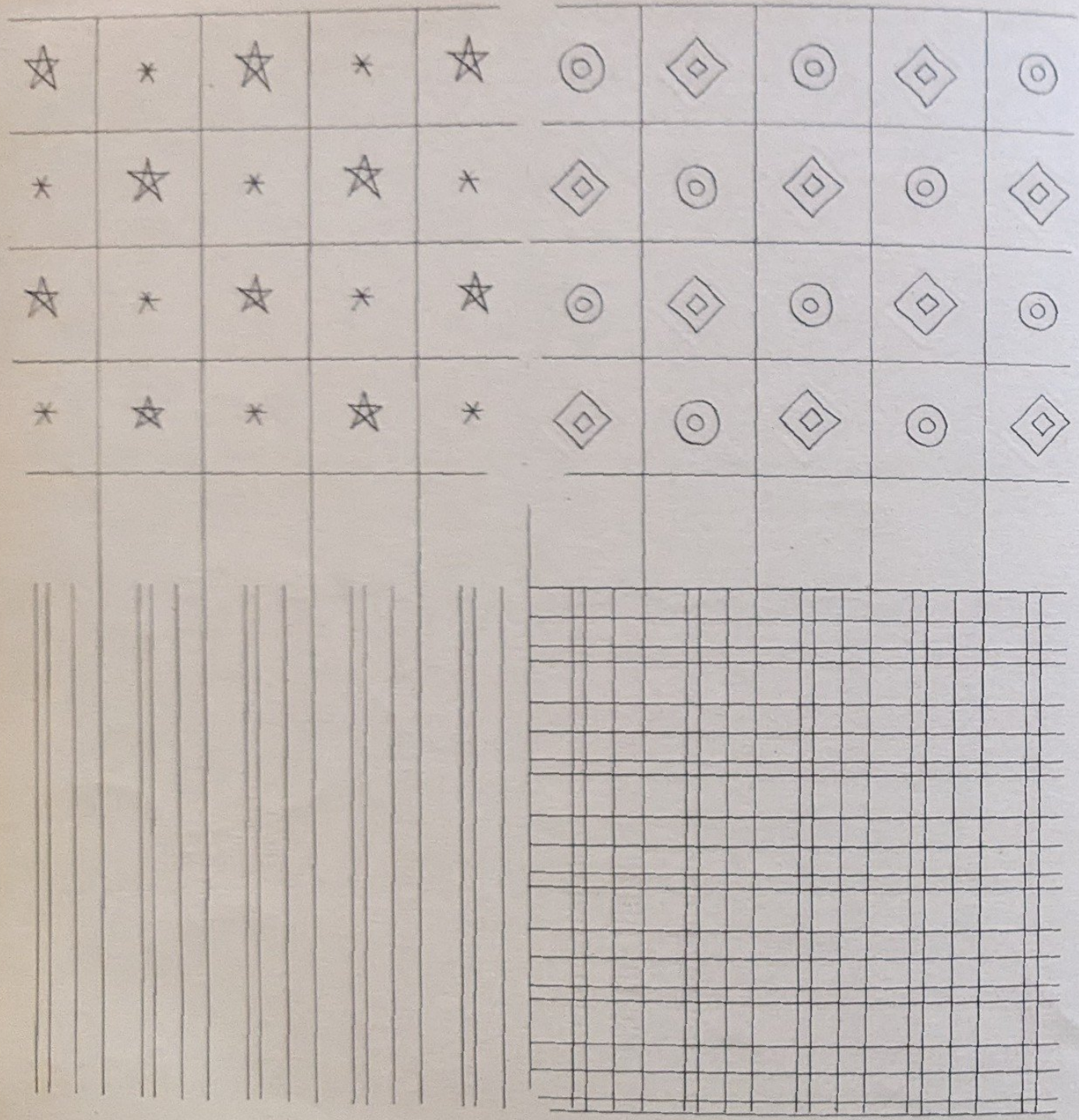
Repetition of Crossed Lines



Alternation of Squares

Alternation of Lines

ALTERNATION



ALTERNATION

(a) *Squares*

Two lines or two units could be used alternately one with another to avoid a degree of sameness, or a series of units or lines could be repeated at regular intervals.

The top design has one of the simple crystal formations used for a basis, with two units placed alternately, one unit being larger than the other. In the second design the two units are more of a size but one has been tipped to give variety and to avoid monotony.

(b) *Lines*

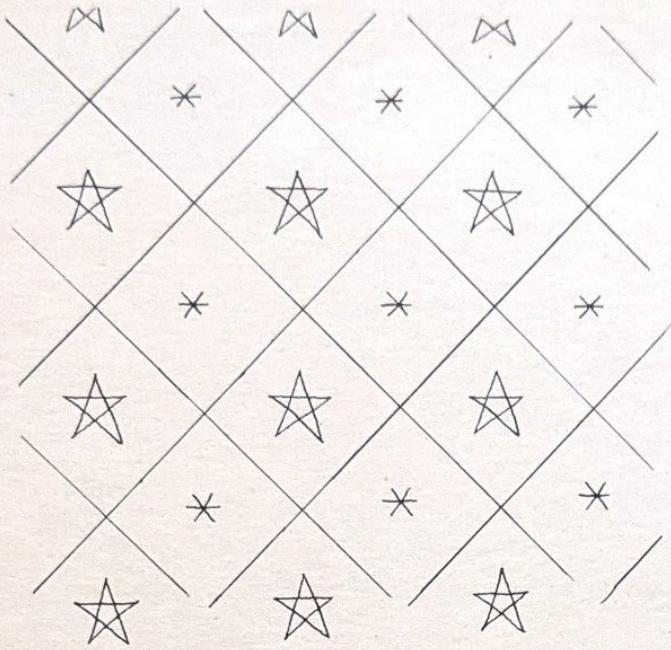
Straight lines form the two lower designs. In the first, one thick line and one twice as thick have been placed alternately and this gives an unequal background space. In the second design, the same two lines have been placed across one another at right angles in the same order, thus giving a tartan effect. The basis of all four designs is formed by straight lines at right angles.

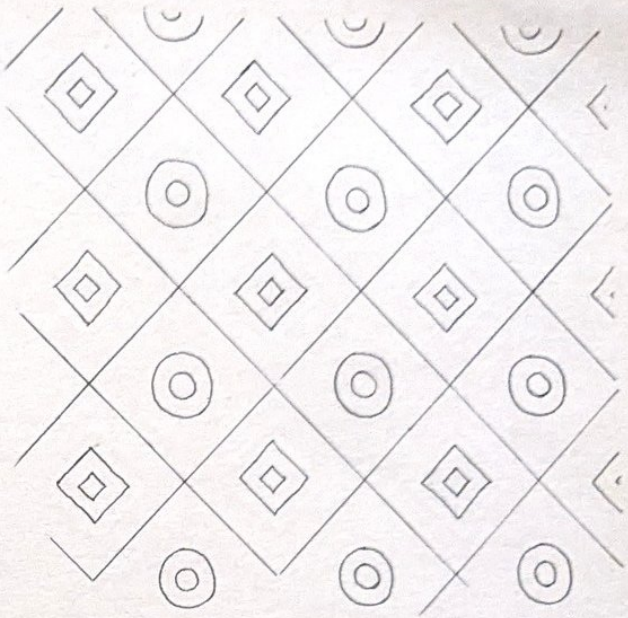
Alternation occurs frequently in nature, especially in plant forms, common examples being the way in which leaves grow on alternate sides of a stem at intervals and the way in which the leaves themselves are made up of leaflets.

(c) *Diagonal Spaces*

Many effects can be obtained by using different angles. The basis of the design here has the squares or diagonals at an angle of 45° each, instead of being vertical and horizontal. The same units have been used to show how dissimilar the effect is when merely turning the square.

Crossing the lines at 60° will give an upright diamond effect, while crossing at 30° will give the design an elongated appearance.



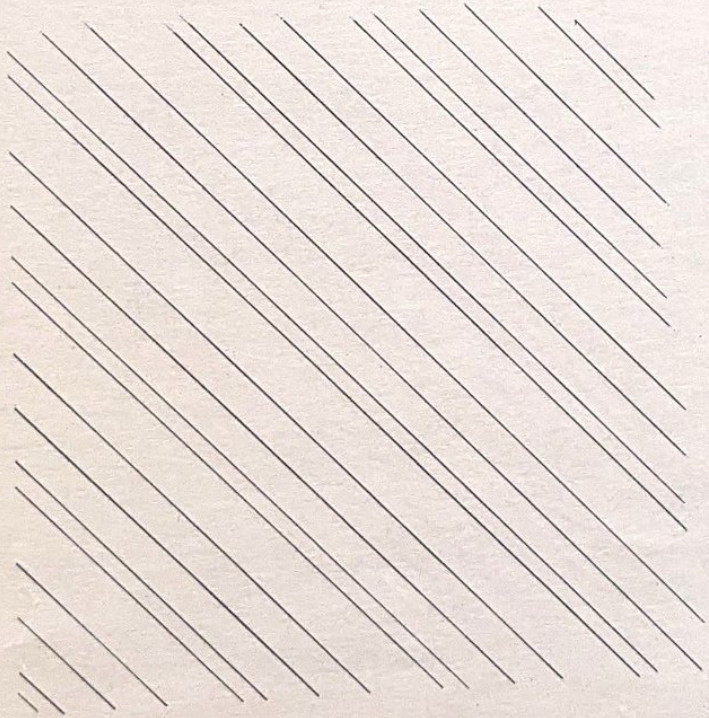


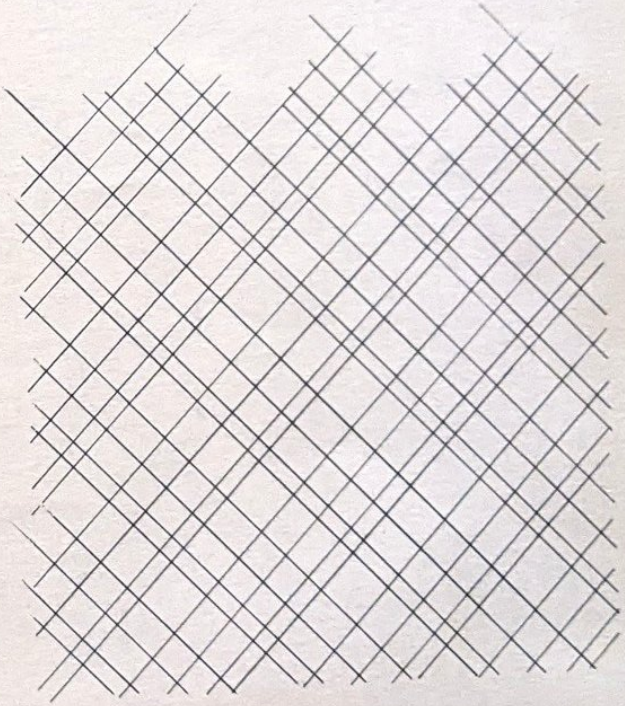
(d) *Diagonal Lines*

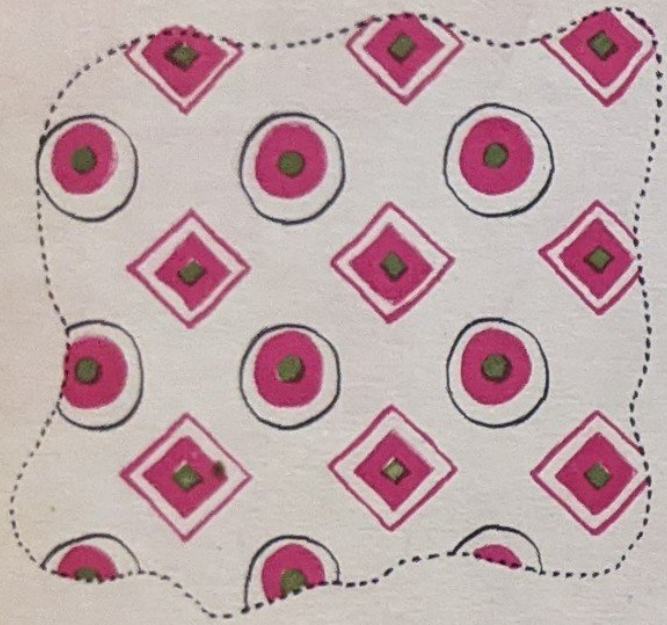
In the two lower diagrams the distinct effect has been arrived at in the same way. The straight lines on the opposite page, with their equal distances, have been used again, but this time instead of being vertical they are placed at 45°.

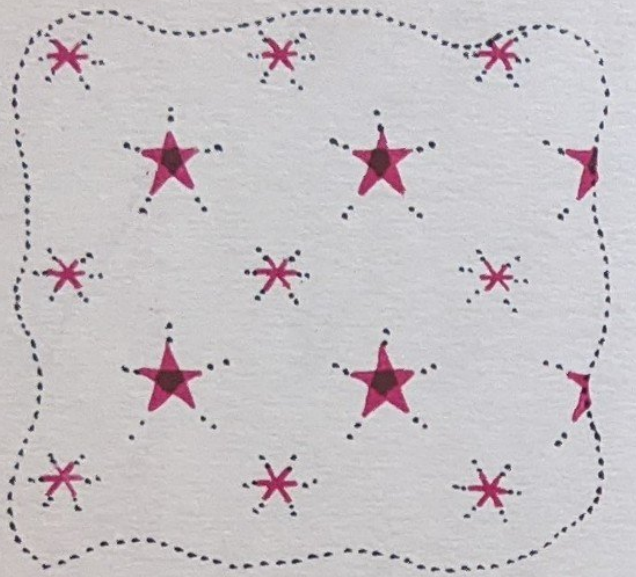
Similarly, many variations can be obtained by merely changing the angle. The plan of the pattern is drawn by marking equal distances along the base line and then using a T-square and set squares.

Numerous patterns can be drawn by varying the size, thickness, scale and so on, even if straight lines only are used.



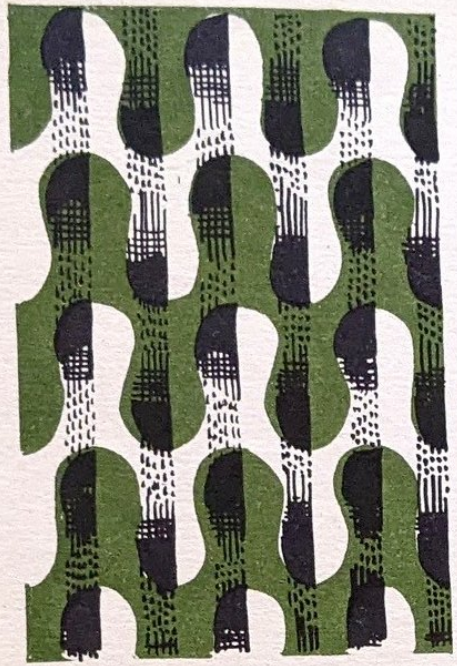


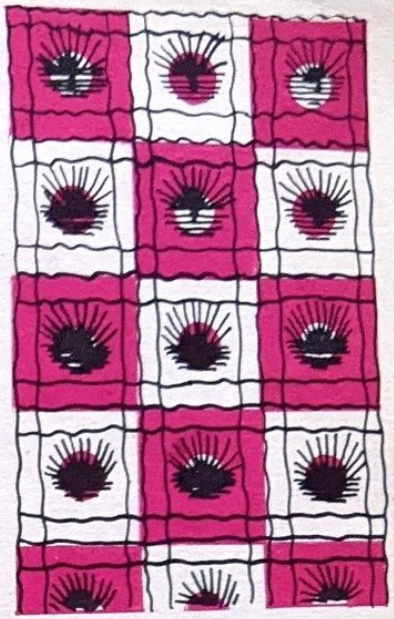


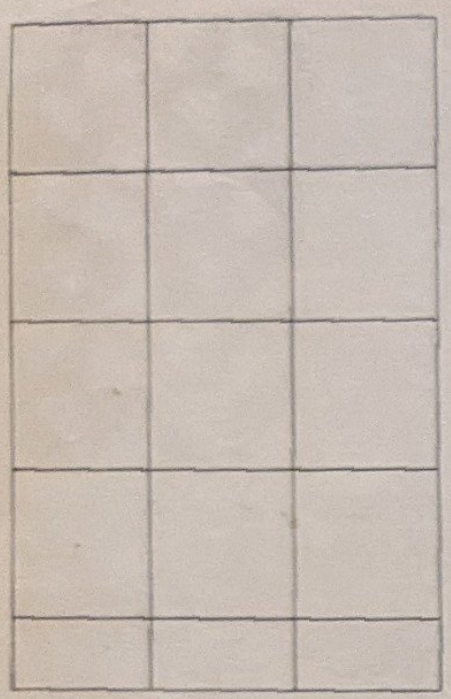


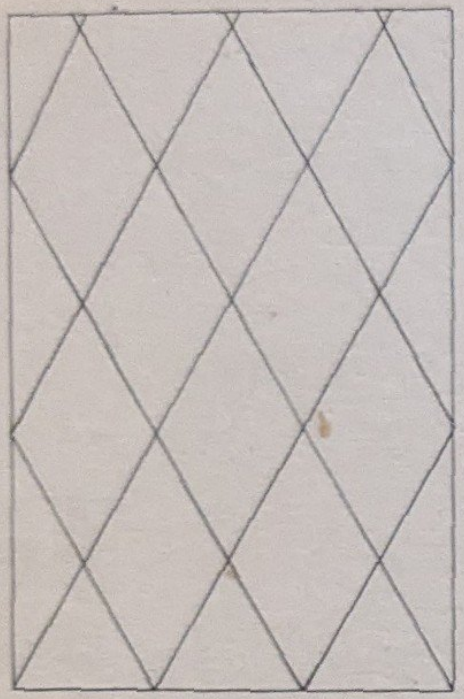
Diagonal Spaces

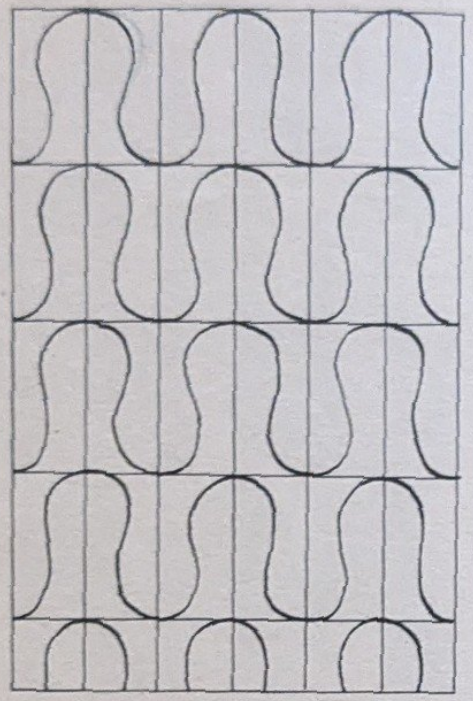
Diagonal Lines

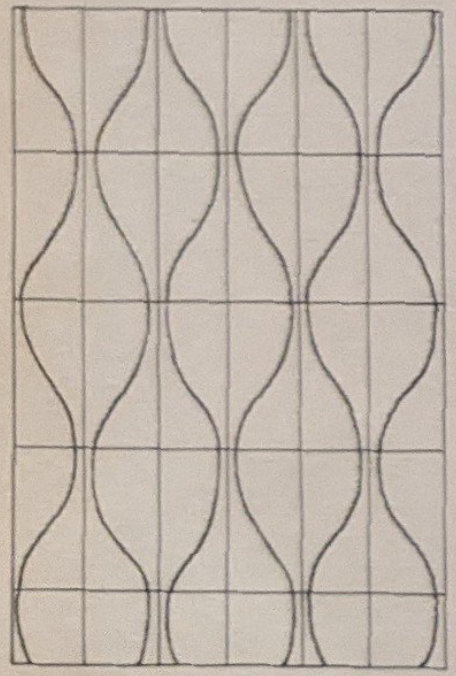


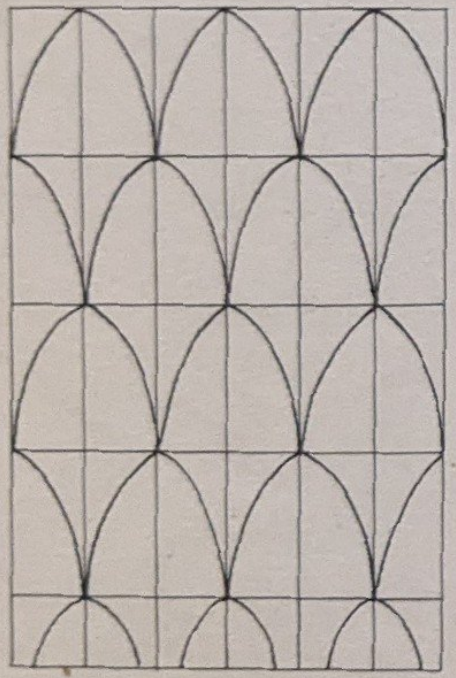


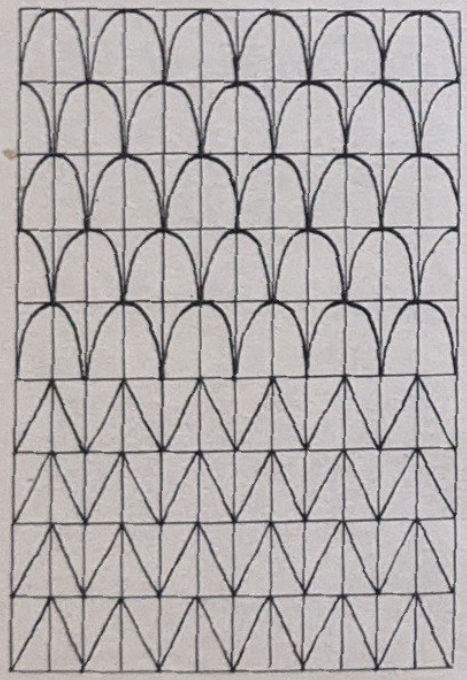












COUNTERCHANGE

The simplest form of a counterchange design is a check or a diamond. By drawing various similar lines on a rectangular basis, shapes are obtained which are equal in area one to another. When the background and shape are identical then the resulting pattern is what is known as counterchange. A chess-board is the simplest example of this.

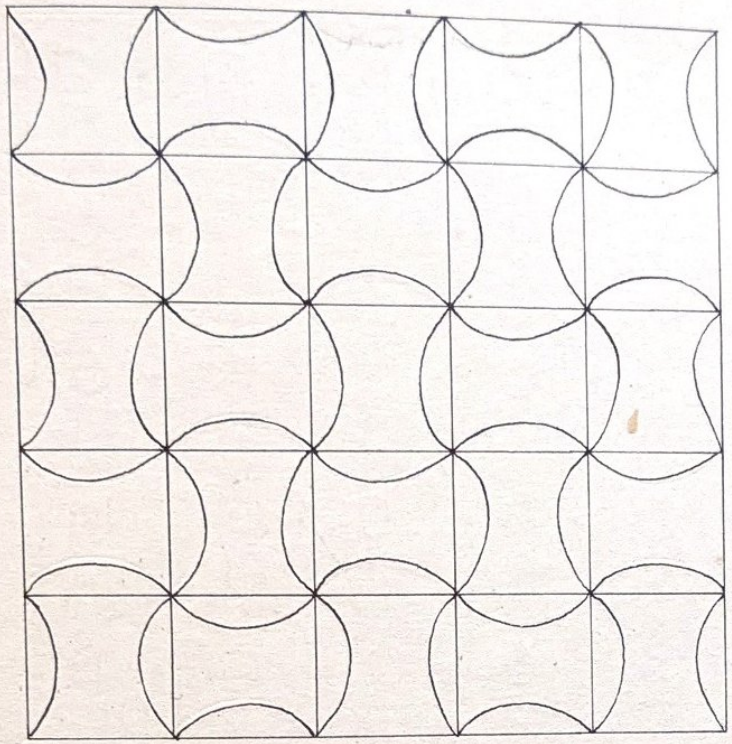
The arrangement occurs in the scales of fishes, the feathers of birds, and in the wings of butterflies. It occurs also in some plant forms, mineral formations, skins of snakes and lizards, and indeed in the whole of the reptile family.

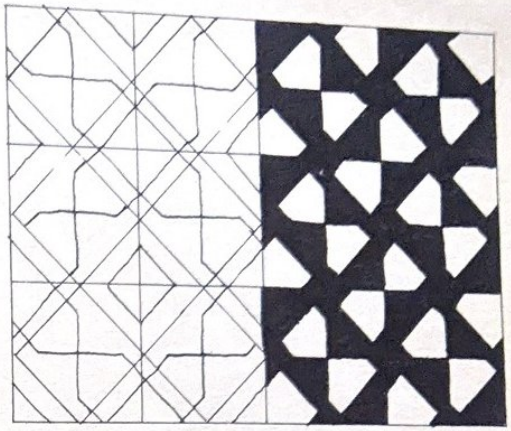
Tiles on roofs usually follow this counterchange pattern, and this plan can be used for designs of marquetry and for parquet floors.

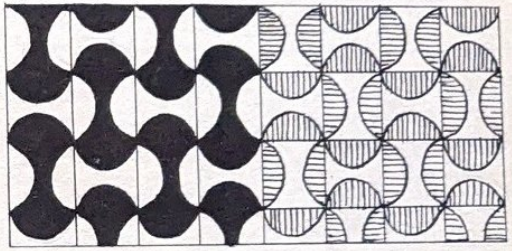
TURNING

(a) *Turning the Shape*

In this case the background of the design is turned, thus making a pattern complete in itself. These shapes can be coloured in various ways, or the spaces used as a plan for more units to be placed within the areas.

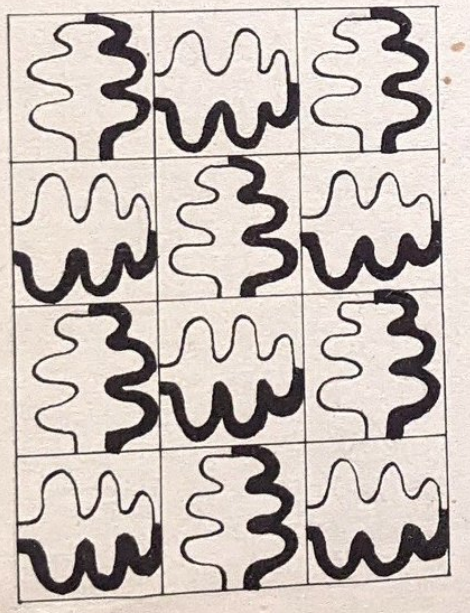


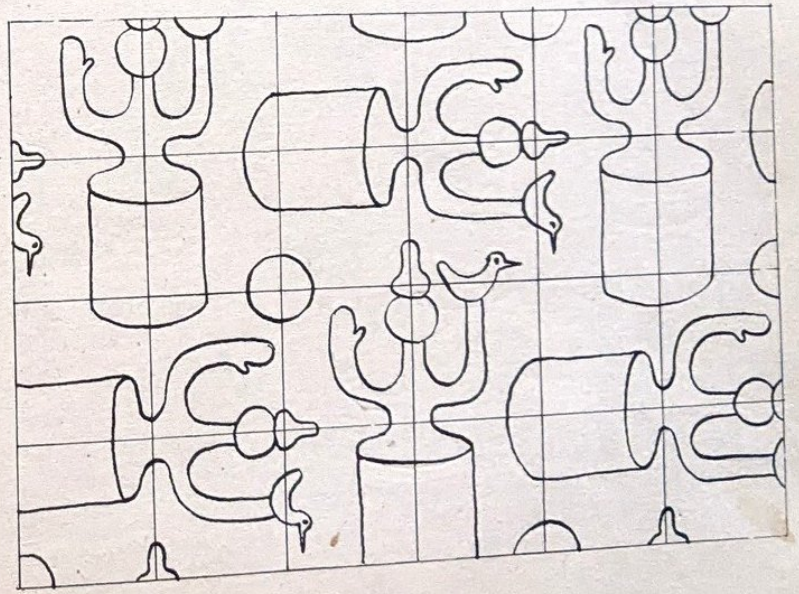


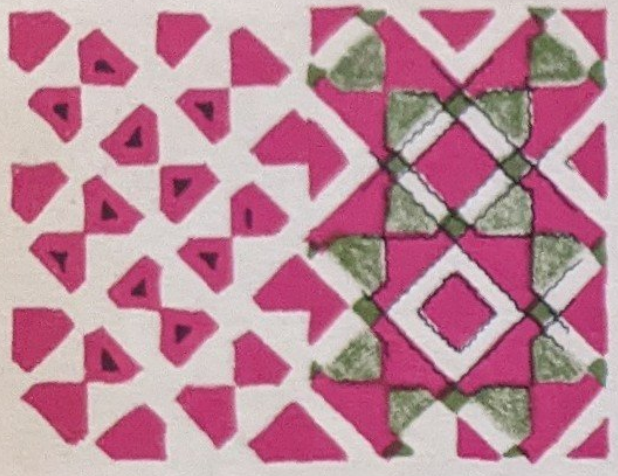


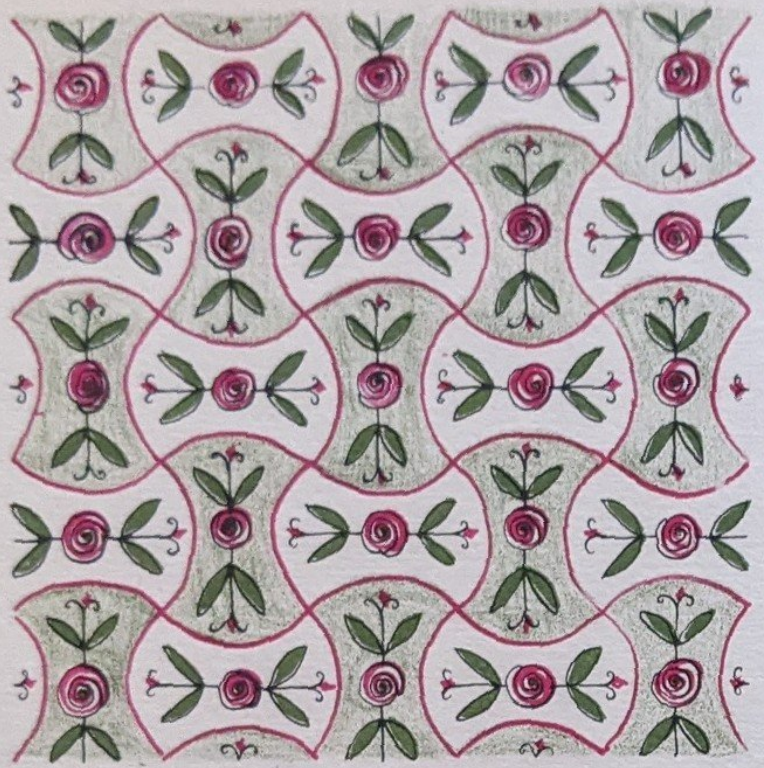
(b) *Turning the Motif*

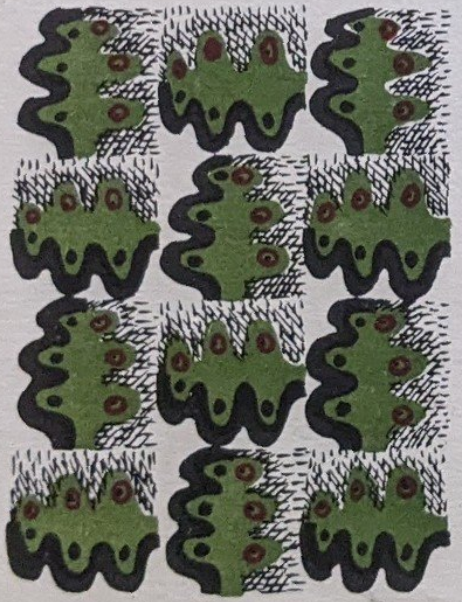
Here the motif itself is turned, but kept flat in the same position and laid sideways. This kind of pattern requires patience and skill, but endless effects could be formed by the use of geometrical instruments and a simple design could gradually be turned into a more complicated one.









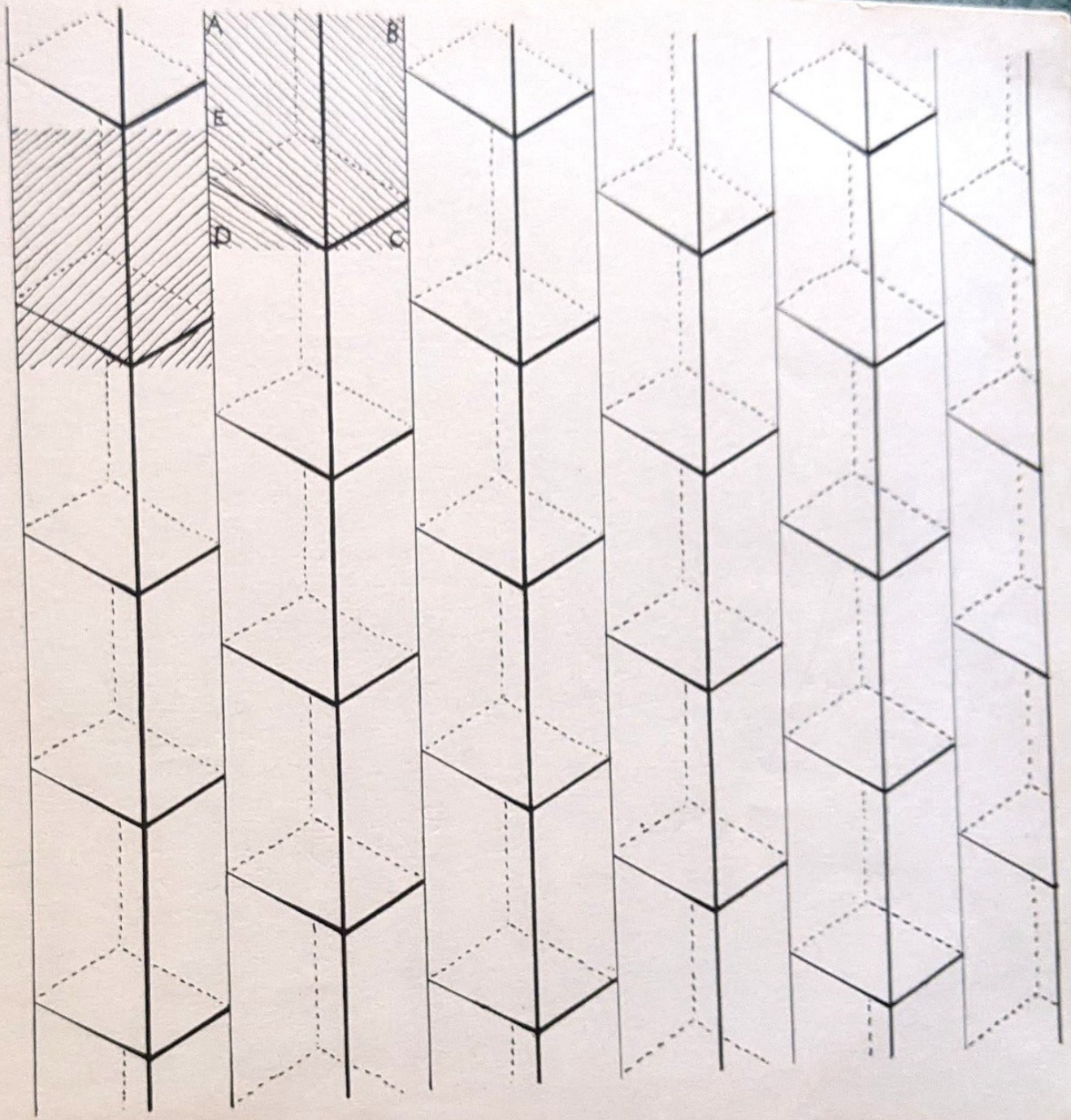


TURNING

HALF DROP

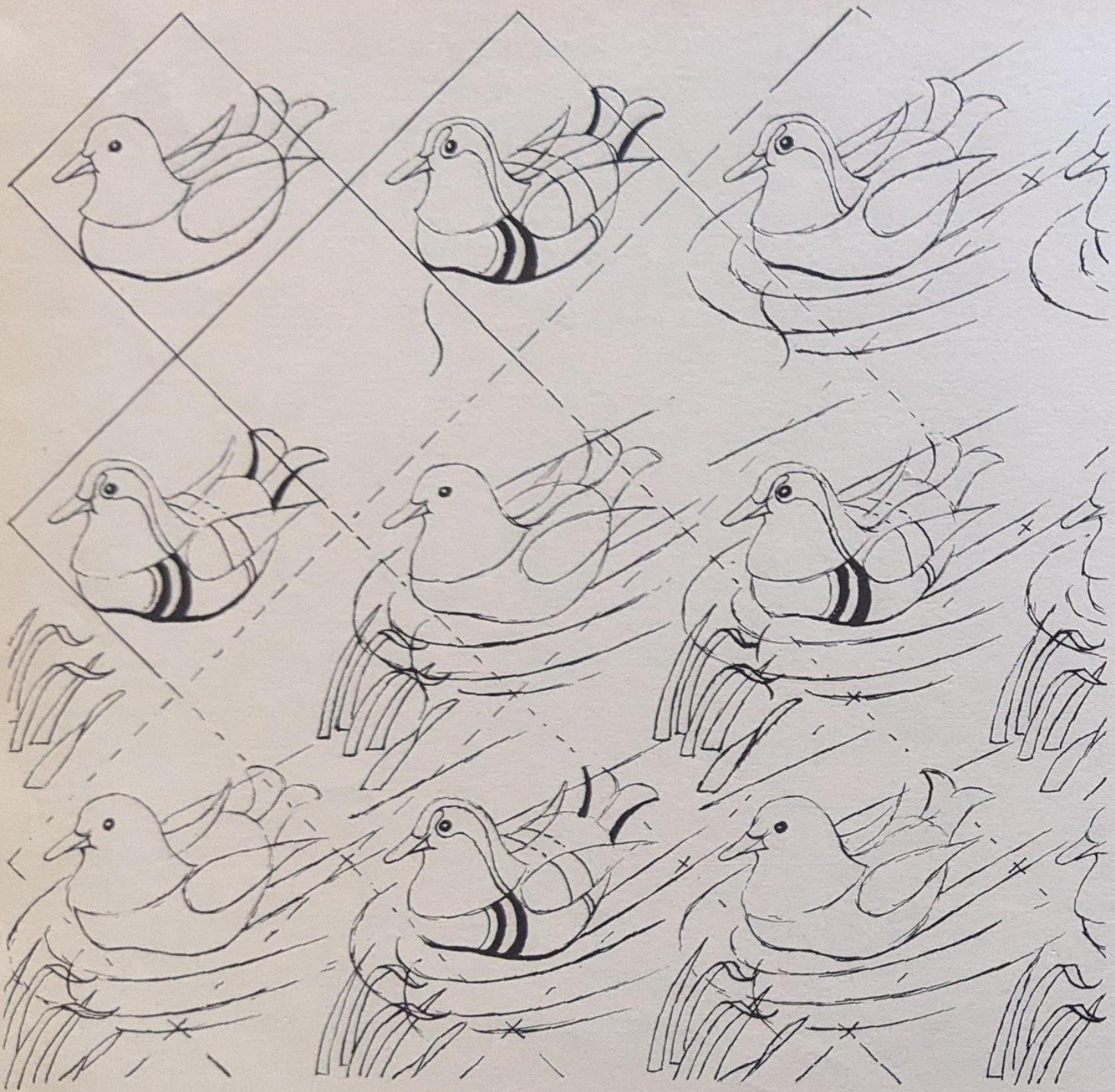
A 'half drop' is often used to get rid of the 'tiled' effect mentioned before. It is a simple brick wall construction – that is, each rectangle is laid half-way alongside the next one. The bricks can be laid either horizontally or vertically, according to the effect desired.

This design is based on endless glass cases an observation made while walking round a museum. Any objects could be placed in the cases, but a high viewpoint for each would be best, as has been used for the cases in the design shown.



HALF DROP

DIAGONALS



DIAGONALS

When making a pictorial repeat pattern a diagonal construction makes a better plan to work on than a squared one.

It is wise to picture first in imagination the finished result, as some things adapt themselves more readily than others. Aerial scenes are particularly suitable, giving a map effect, or landscapes viewed from a height. Water also makes an ideal repeat pattern, with or without the addition of weeds, fishes, dragonflies, etc. Sky scenes with aeroplanes, birds or balloons look well, but a difficulty arises when both land and sky are used, as areas of sky do not look well below areas of land.

Visualize the pictorial design as a whole, and never finish one diamond before repeating the main object in several spaces first while roughing it out. In this way, linking lines can gradually be added, and white spaces avoided by the addition of subsidiary objects where necessary.

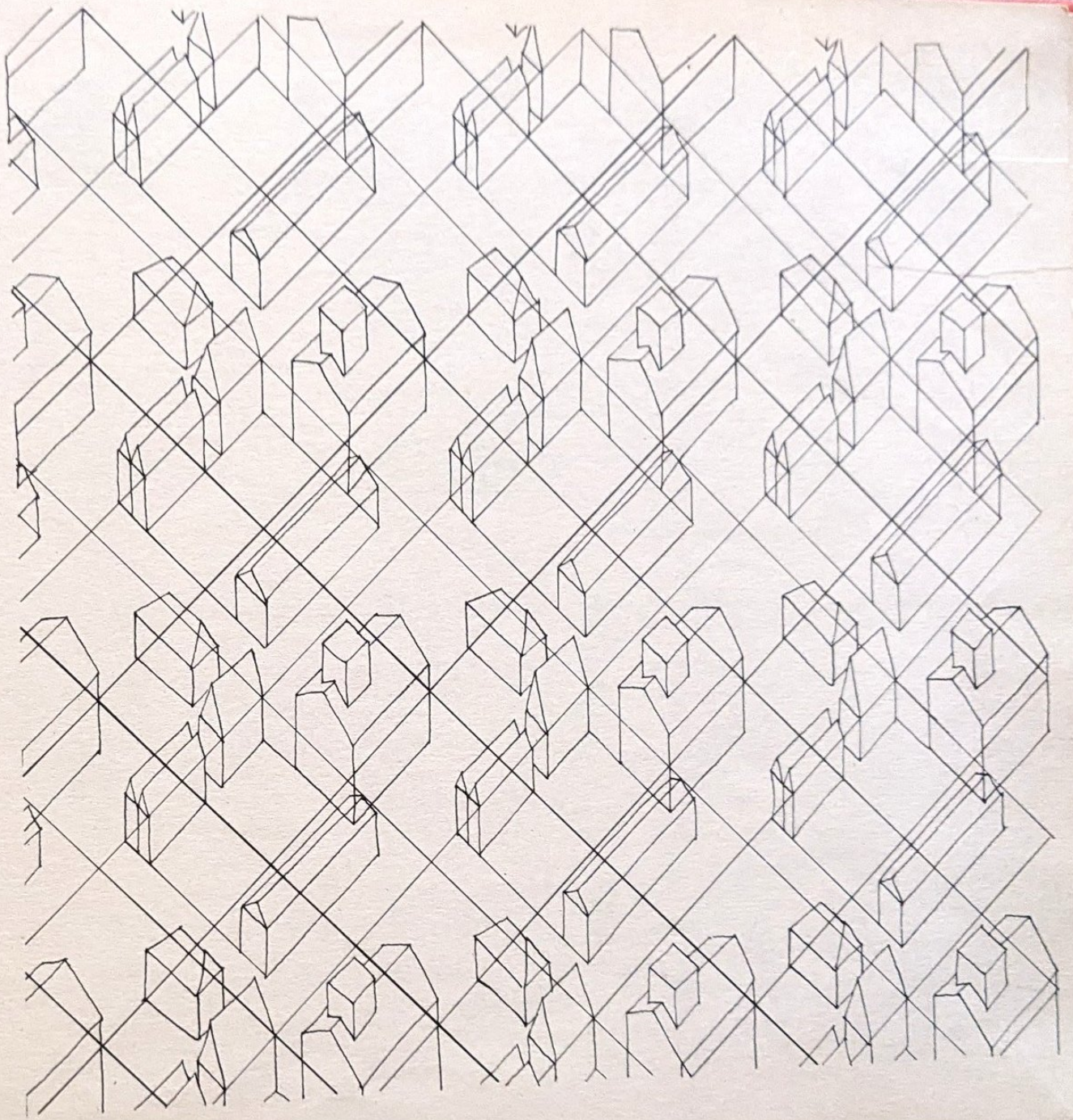
Tropical islands, ponds and country scenes all look well on a diagonal construction.

ISOMETRICS

Where the design consists of many straight lines, such as those of houses or furniture, then an isometric basis is a good one on which to build up from the diagonals.

An isometric drawing is one in which the lines are of equal measure and are not smaller in the distance. The angles also are constant throughout. Therefore the lines are actually parallel and do not vanish to a point on the horizon; they rise at equal angles and set squares can be used. In this design the church was drawn first in several of the diamonds, and then gradually the roads and houses were added.

Villages, farms, skyscrapers and mechanical scenes would all work out with an isometric basis from which to start the design, and although the lines do not vanish as in perspective, the result looks quite possible. In any case, it is wise to avoid having a horizon line when making an all-over pattern.



ISOMETRICS

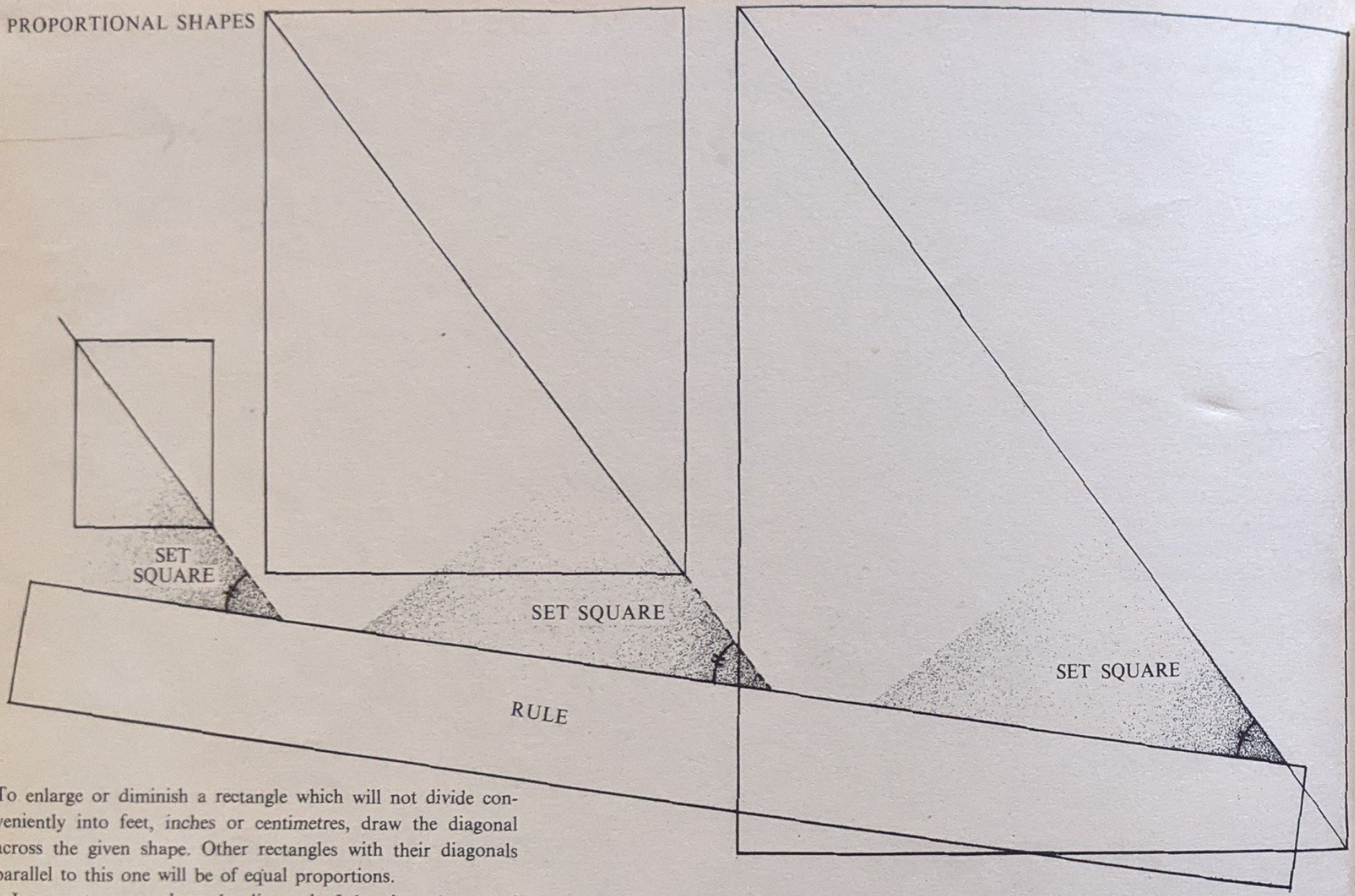
NOTES ON PATTERN

The pages in this section are not designed to be held up towards the light as in the previous ones.

COLOUR VARIETY

It is important when placing the colours that more of one should be used than another. If variety is desired, then avoid using two colours in equal proportions.

In the diagrams of the wild rose, the first column has red predominating, the second white, the third mixtures, the fourth black and the last column green. Thus it can be seen that variety is obtained by the areas of colour, when those colours are limited in number.



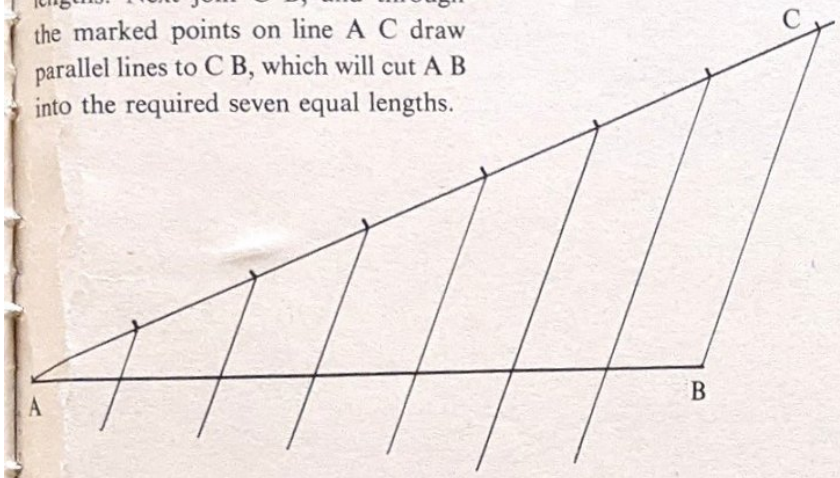
To enlarge or diminish a rectangle which will not divide conveniently into feet, inches or centimetres, draw the diagonal across the given shape. Other rectangles with their diagonals parallel to this one will be of equal proportions.

Lay a set square along the diagonal of the given shape, and alongside the set square place a rule touching one side of it. Then by holding the rule firmly with one hand the set square can be moved along and other diagonals drawn for the required new rectangles.

CONSTRUCTIONS

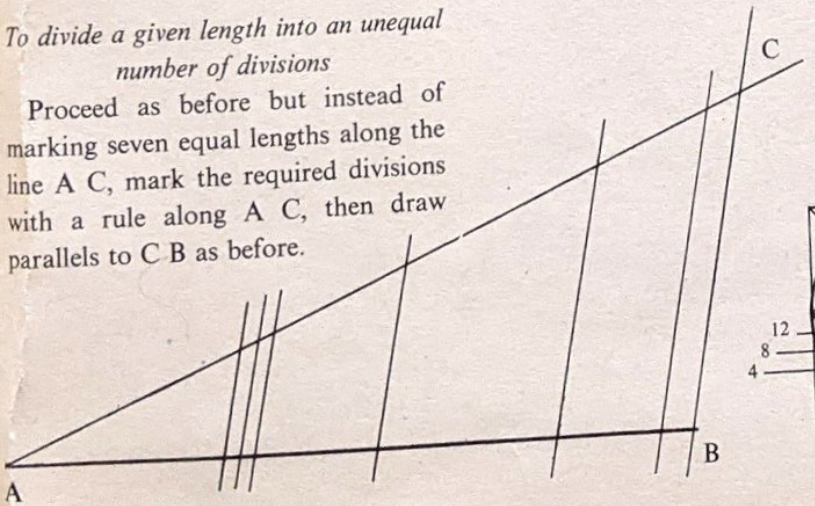
To divide a given length into an odd number of equal divisions

Suppose A B has to be divided into seven equal parts. Draw a line A C at any angle from A and with a rule mark off seven inches or any convenient equal lengths. Next join C B, and through the marked points on line A C draw parallel lines to C B, which will cut A B into the required seven equal lengths.



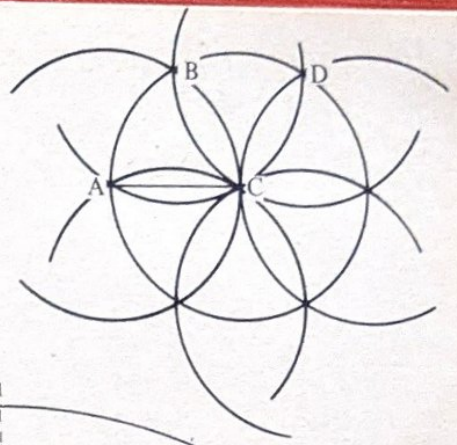
To divide a given length into an unequal number of divisions

Proceed as before but instead of marking seven equal lengths along the line A C, mark the required divisions with a rule along A C, then draw parallels to C B as before.



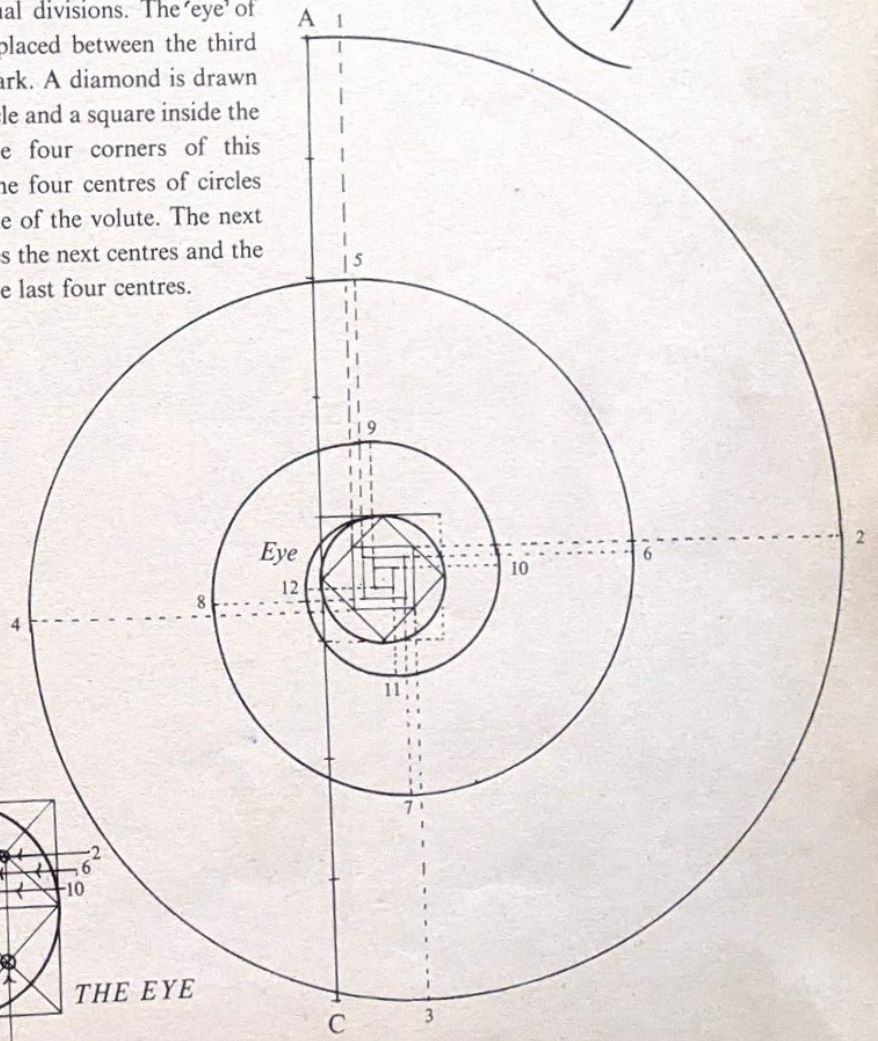
To divide a circle into six equal parts or multiples of six

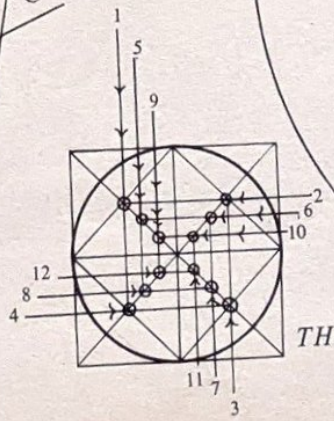
Take the radius C A and, with A as centre, mark off equal distances B and D along the circumference. Then with B as centre, do the same again and so on.



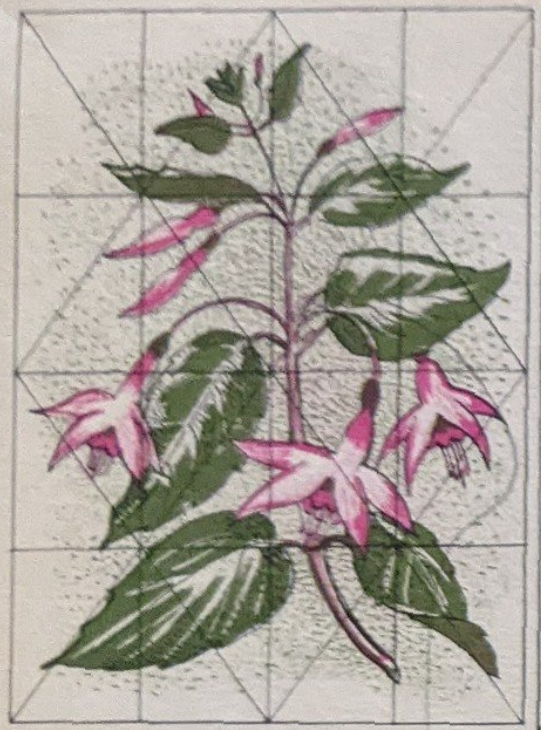
An Ionic Volute

Between A and C is a line marked off into eight equal divisions. The 'eye' of the volute is placed between the third and fourth mark. A diamond is drawn inside this circle and a square inside the diamond. The four corners of this square give the four centres of circles for the outside of the volute. The next square in gives the next centres and the last square the last four centres.

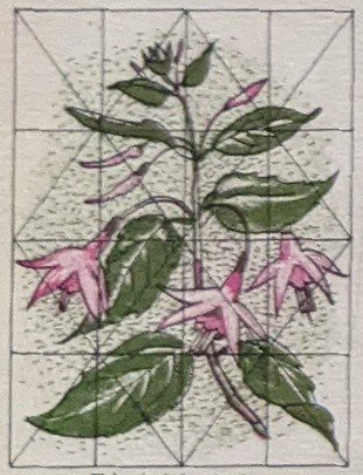




THE EYE

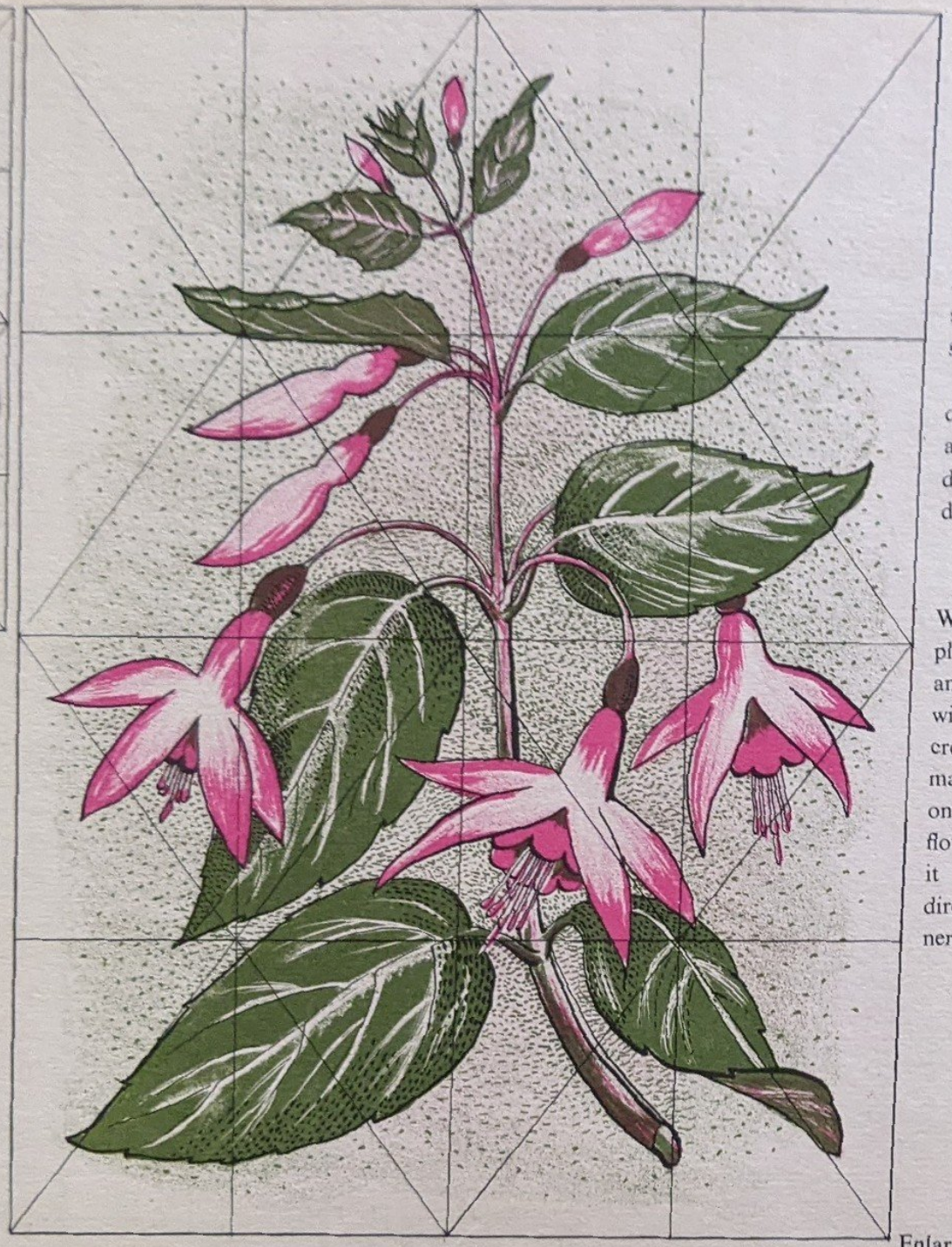


Original size of design



Diminished size

The two arrows mark the directions of the parallel lines



Enlarged size

ENLARGING AND DIMINISHING

Having obtained the outside rec angle by the diagonal method page 72, the next step is to dra vertical lines through the poin where the lines cross, and als horizontal lines, thus makin sixteen rectangular shapes of th same proportion.

It is now simple to draw the design in each appropriate rect angle, and extra lines can be drawn at the positions where the design is more complicated.

A NOTE ON DESIGN

When filling the shape with a plant, draw the main stems first and avoid covering these entirely with leaves or flowers. Do not cross the lines at right angles, or make the growing stems parallel one to another. Make the stems flow in a radiating manner, and it is wise not to take them directly to any of the four corners of the shape to be filled.

GLOSSARY

ABSTRACT
CONVENTIONAL
EMBLEM
HELICAL
ISOMETRIC
OCTAGON
POWDERING
SCALE
SPRIG
SYMMETRY
AFFIXES
COUNTERCHANGE
FAN
INTERLACE
KEY
OGEE
PROPORTION
SCROLLS
STARS
TANGENT
ALLEGORICAL
CRESCENT
FESTOON
HERRINGBONE
LATTICE
ORNAMENT
QUINCUNX
SILHOUETTE
STIPPLE
TARTAN
ALTERNATION
CROSS HATCH
FLUTE
HEXAGON
MEDALLION
PARQUET
RADIATION
STRAPWORK
TEXTURE
BALANCE
DECORATION
GROTESQUE
HIEROGLYPHIC
MNEMONIC
PARSEME
REPETITION
STROPHOID
UNIT
CARTOUCHE
DEVICE
GUILLOCHE
IMBRICATION
MOSAIC
PENTAGON
RINCEAU
SPIRALS
SUPERPOSITION
VOLUTE
CONCENTRIC
DIAPER
HATCHING
INTERCHANGE
NATURAL
PERSPECTIVE
ROSETTE
SPOTTING
SYMBOL
ZOOMORPHIC

GLOSSARY

Abstract: The opposite of natural.

Affixes: Small features of decoration.

Allegorical: A figure or object used to convey another meaning. In the illustration, the lion signifies strength.

Alternation: Units placed alternately.

Balance: When two halves of a design balance one another, but are not symmetrical.

Cartouche: A panel usually with curled edges.

Concentric: Having a common centre.

Conventional: To follow convention in treatment, but not as unnatural as 'abstract'.

Counterchange: To change places, as in a check, or chess-board.

Crescent: The shape of the moon in the first quarter.

Cross Hatch: Shading suggested by the crossing of lines close together.

Decoration: Sometimes gives beauty to a commonplace object. Anything used for the sake of embellishment.

Device: A pattern suggesting a symbol.

Diaper: A uniform pattern based on squares or threads.

Emblem: A symbol, such as the dove for the emblem of peace. In the illustration, the fleur-de-lis of France.

Fan: Something that spreads out from a point.

Festoon: A hanging garland.

Flute: Ornamental groove.

Grotesque: A ludicrous carved figure, or a queer animal.

Guilloche: 'Braided ribbon' in a pattern as illustrated. Can be single, double, or of more thicknesses.

Hatching: A number of lines, generally parallel, to give the effect of shading.

Helical: Having a spiral form.

Herringbone: A pattern recalling a herring's spinal bone.

Hexagon: A six-sided figure.

Hieroglyphic: A picture symbol meaning a word or words. The picture given meaning 'Earth'.

Imbrication: An overlapping scale-like arrangement.

Interchange: To alternate or change about. A running border divided by a central line, in which pattern and ground alternate in colour.

Interlace: To twine together, and to pass over and under each other.

Isometric: Where lines are actually equal, and not vanishing as in perspective.

Key: Rectangular bands, as shown in the illustration.

Lattice: A network of intersecting lines.

Medallion: A circular or oval ornament on a panel, etc.

Mnemonic: A device for aiding the memory. In this case 'W.E.' spells 'we', when facing north.

Mosàic: A surface decoration made by inlaying small fragments of coloured glass, stone, or other material.

Natural: As in nature.

Octagon: An eight-sided figure.

Ogee: A double curve, as in the illustration.

Ornament: Decoration adapted in order to fill a space.

Parquet: Wood inlaid to form a pattern.

Parseme: A scattering of flowers over the surface.

Pentagon: A five-sided figure.

Perspective: The representing of solid objects realistically on a flat surface.

Powdering: A background of dots or other small units.

Proportion: The relation of one shape to another.

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Quincunx: Group of five objects so arranged that one is at each corner of a square and one in the middle.

Radiation: The branching out from a centre.

Repetition: The act of repeating a unit.

Rinceau: A design consisting of sprigs of foliage arranged in scrolls.

Rosette: A circular ornament made up of many parts disposed round the centre.

Scale: The covering structure of fish or insects.

Scroffits: Lines scraped away on wood, clay, or prepared paper, etc.

Silhouette: An outline representation of an object or person, filled in with a plain colour, usually black.

Spirals: Curves running continually about and receding from a fixed centre.

Spotting: Spots at equal or unequal intervals.

Stipple: A dotted effect produced by a brush, pencil or other medium.

Strapwork: Ornament consisting of narrow straps interlacing one another.

Strophoid: A figure of the shape illustrated.

Superposition: One design put on top of another.

Symbol: An object representing an idea, quality, or person. The illustration is of the Bull, one of the signs of the zodiac.

Symmetry: Correct proportion between corresponding parts.

Tangent: A straight line touching a curve.

Tartan: Cloth woven in coloured square patterns.

Texture: The arrangement of threads of a fabric, or surface structure on an object.

Unit: A single complete item of expression.

Volute: A spiral scroll, widening out as it unrolls.

Zoomorphic: A pattern or device in which animals or birds appear.